

# **Renewable Energy Trends in Consumption and Electricity, 2005**

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## Preface

The Energy Information Administration (EIA) reports detailed historical data on renewable energy consumption and electricity annually in its report, the *Renewable Energy Annual*. This report, *Renewable Energy Trends in Consumption and Electricity, 2005*, provides an overview and tables with historical data spanning 1989-2005, including revisions. These tables correspond to similar tables to be presented in *Renewable Energy Annual 2005* and are numbered accordingly.

The renewable energy resources in the report include: biomass (wood, wood waste, municipal solid waste, landfill gas, ethanol and biodiesel, and other biomass); geothermal; wind; solar (solar thermal and photovoltaic); and conventional hydropower. Hydroelectric pumped storage is excluded, because it is usually based on non-renewable energy sources.

The underlying data in this report are consistent with EIA's report, *Electric Power Monthly February 2007*. However, the estimates here do not account for changes in the classification of waste first reflected in EIA's *Electric Power Monthly March 2007* and *Annual Energy Review 2006*. Details of these changes are found in the EIA report, *Methodology for Allocating Municipal Solid Waste to Biogenic and Non-Biogenic Energy* (Washington, DC, 2007).<sup>1</sup>

Definitions for terms used in this report can be found in EIA's Energy Glossary: <http://www.eia.doe.gov/glossary/index.html>. General information about all the EIA surveys with data related to renewable energy and referenced in this report can be found here: <http://www.eia.doe.gov/oss/forms.html>.

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<sup>1</sup> See the EIA website here: <http://www.eia.doe.gov/fuelrenewable.html>.

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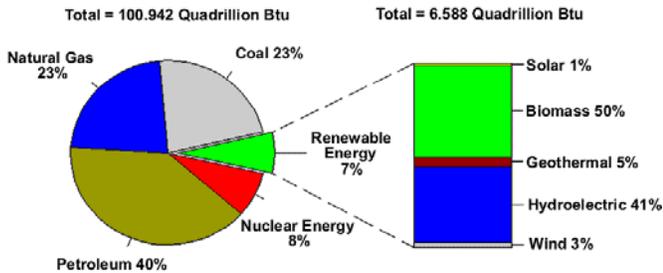
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# Renewable Energy Trends in Consumption and Electricity, 2005

## Consumption

Renewable energy consumption increased 2 percent between 2004 and 2005 (Table 1), while total U.S. energy consumption was essentially flat. Increases in coal and petroleum demand were offset by decreases in natural gas and nuclear energy. At 6.6 quadrillion btu, renewable energy's market share approached 7 percent, a slightly higher share than in the preceding few years (Figure H1). Data revisions and changes in the definition of biofuels combined to have a greater effect on the renewable energy balance than actual changes in the renewable energy industry; see the section, "Energy Consumption Revisions" below.

**Figure H1. The Role of Renewable Energy Consumption in the Nation's Energy Supply, 2005**



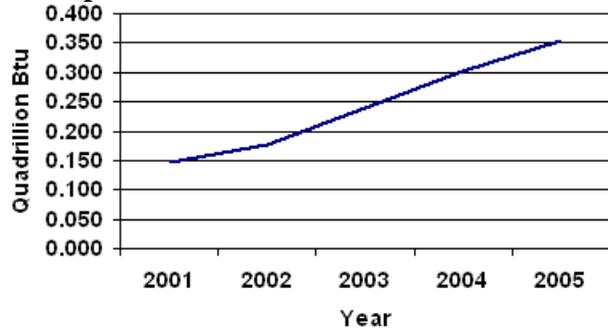
Source: Table 1 of this report.

The electric power and industrial sectors continued to have by far the largest portions of renewable energy consumption with 56 and 29 percent of the market, respectively (Table 2). Nonetheless, renewable energy still accounts for only 9 percent of total U.S. electricity generation. Wind energy experienced the most rapid growth at 26 percent between 2004 and 2005, while the biofuel industry's annual rate of growth was the second most rapid at over 15 percent. Wind energy now accounts for nearly 3 percent of total renewable energy, compared with barely over 1 percent in 2001.

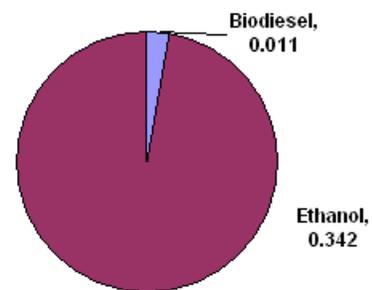
Renewable energy consumed (by electric only and combined heat and power plants) remained flat at about 4,000 trillion btu between 2004 and 2005 at just over 60 percent of renewable energy demand (Tables 1 and 3). Wood/wood waste, conventional hydro, and wind energy consumed in the electric power sector for electricity generation increased, largely offsetting a decline in industrial wood/wood waste consumption for electricity generation. The remaining industrial sector renewable energy consumed for electricity, as well as commercial sector consumption, was either flat or increased just slightly.

Renewable energy consumed for non-electric use increased 7 percent, from 2.360 quadrillion btu to 2.525 quadrillion btu, following trends seen in recent years (Table 4). Most of the 500 trillion btu change between 2001 and 2005 was driven by growth in biofuel consumption in the transportation sector and in the industrial sector (i.e. at the biorefineries used to produce biofuels) (Figure H2). As a result, industrial biomass energy for non-electric purposes grew nearly 18 percent between 2001 and 2005, while biomass used to produce electricity in the industrial sector dropped by 16 percent. Biomass is the only form of renewable energy used more for non-electric purposes than to generate electricity-74 percent of total biomass consumption is for non-electric purposes (Tables 1 and 4). A smaller portion of the increase in non-electric use of renewable energy was due to industrial sector consumption of wood/wood waste for steam and process heat.

**Figure H2. Biofuels Consumption in the Transportation Sector, 2001-2005**



**2005 Total = 0.353 Quadrillion Btu**

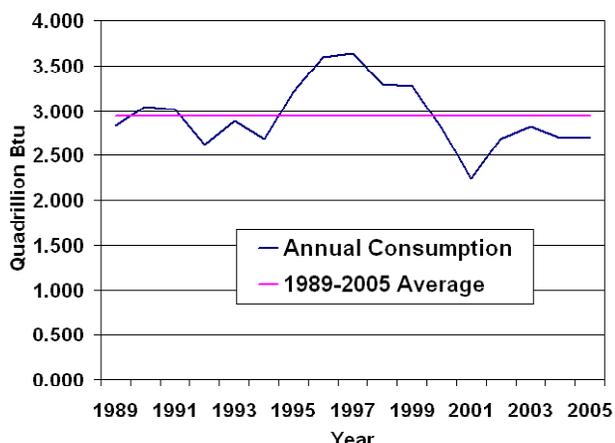


Source: Tables 2 of this report.

Tables 5a and 5b present historical renewable energy consumption from 1989 to 2005. Some general trends are of interest. Changes in the hydroelectric industry due to fluctuating levels of water influence renewable energy consumption as much or more than any other factor, including those discussed above. In 2001, renewable energy appeared to decline sharply, but a closer look reveals that hydroelectric power was at its lowest output between 1989 and 2005 due to

drought. In fact, the swing in hydropower between 1997 (the highest between 1989 and 2005) and 2001 (the lowest) was 1.4 quadrillion btu (Figure H3). By 2005, water levels returned to more normal levels, and renewable energy accounted for 7 percent of U.S. energy consumption, compared to 6 percent in 2001.

**Figure H3. Hydroelectric Power Consumption, 1989-2005**

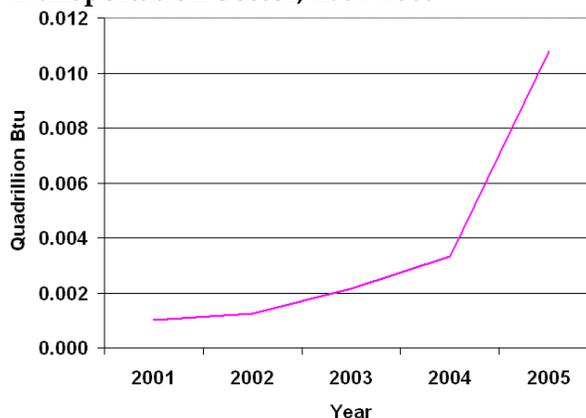


Source: Tables 5a and 5b of this report.

Biomass energy consumption increased by 3 percent overall to 3,298 trillion btu in 2005, or half of total renewable energy consumption (Tables 1 and 6). Nearly 65 percent of biomass energy consumption, or 2,126 trillion btu, was wood consumption, concentrated in the industrial sector’s lumber and paper and pulp industries. Another 17 percent, 577 trillion btu, was energy from waste. Despite being a relatively small component of biomass, biofuels experienced the most rapid growth within the biomass fuel category. Ethanol consumption in the transportation sector was 342 trillion btu, or 4 billion gallons in 2005, well on the way to allowing the ethanol industry meet the Renewables Fuel Standard of 7.5 billion gallons in 2012.<sup>2</sup> Biodiesel consumption in the transportation sector represented a much smaller volume of biofuels than ethanol, but it increased almost fourfold to 11 trillion btu from 2004 to 2005, and up from just 1 trillion btu in 2001 (Figure H4). Including biofuel losses and coproducts in the industrial sector, total biofuel consumption was 594 trillion btu in 2005.

<sup>2</sup> The Energy Policy Act of 2005, signed into law in August 2005, established the Renewable Fuel Standard, which requires that gasoline sold in the United States contain 7.5 billion gallons of renewable fuels by 2012. Since then President Bush in his State of the Union address on January 23, 2007 proposed an “Alternate Fuel Standard” with a goal of 35 billion gallons of renewable and alternate fuels by 2017.

**Figure H4. Biodiesel Consumption in the Transportation Sector, 2001-2005**



Source: Table 2 of this report.

Energy consumption from waste in 2005 was little changed from the preceding few years (Tables 6 and 7). More than half, or 299 trillion btu, was municipal solid waste (MSW) consumed primarily by independent power producers and entities in the commercial sector for producing electric power. The vast majority of MSW energy was consumed by independent power producers. Landfill gas and other biomass consumption for 2005 were 148 trillion btu and 130 trillion btu, respectively.

Industrial biomass energy consumption increased about 2 percent to 1,875 trillion btu in 2005 (Tables 2 and 8). Biorefinery consumption, which is presented for the first time in this report, accounts for about 241 trillion btu of this total. This includes energy consumed to produce ethanol and biodiesel fuels and coproducts. While industries frequently cogenerate electricity and steam, most biomass energy consumption in the industrial sector, or 1,557 trillion btu, was used for useful thermal output or process heat during 2005.

The Paper and Allied Products industry consumed nearly two-thirds of all biomass for energy in 2005. This industry accounted for nearly 60 percent of biomass consumed to produce “useful thermal output” and over 90 percent of total biomass energy consumed to produce electricity. Seventy percent of biomass energy consumed by the Paper and Allied Products industry was black liquor, a residue of the kraft paper-making process.

A total of 109 electricity generating plants burned both biomass and coal in 2005. Table 9 shows the individual plant’s total energy consumption and separately the percent each from biomass, coal, and other energy sources. Plants for which biomass is only a small fraction of total energy consumption compared to coal are generally “co-fired” plants attempting to reduce emissions without making major retrofit investments. The remaining plants are dual- or multi-fired plants consuming fuels based on availability, demand

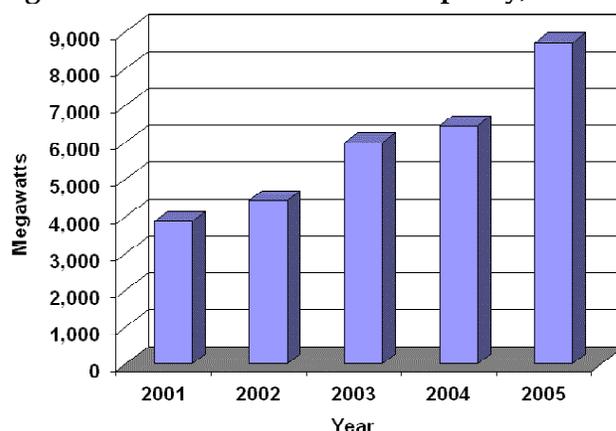
and price. The average fuel mix for plants that use both coal and biomass was about 36 percent biomass and 55 percent coal in 2005, with the remainder being other fuels.

## Electricity

Renewable energy provided about 365 billion kilowatthours or 9 percent of total U.S. generation in 2005 (Table 11).<sup>3</sup> Conventional hydroelectric power provided about 74 percent or 270 billion kilowatthours of the renewable total. However, the biggest year to year increase, almost 4 billion kilowatthours, was for the expanding wind industry, which has grown at an average annual rate of 28 percent between 2001 and 2005. As a result, wind generation, which stood at half of geothermal generation in 2001, exceeded geothermal generation in 2005. Ninety percent of renewable generation was in the electric power sector, while the industrial and commercial sectors accounted for the remainder.

Renewable electric capacity increased by just over 2 percent to 98,791 megawatts in 2005. However, wind energy provided the second-greatest increase in capacity of all energy sources, renewable or non-renewable. Between 2004 and 2005, total U.S. net summer capacity increased by over 15,000 megawatts to 978,020 megawatts.<sup>4</sup> Of this increase, natural gas provided about 12,000 megawatts; wind followed in second place with over 2,000 megawatts (Table 12 and Figure H5). In December 2006 the federal renewable production tax credit was extended through 2008 with the passage of the Tax Relief and Health Care Act of 2006.<sup>5</sup> This is expected to support continued expansion in the renewable electric power industry.

**Figure H5. Wind Net Summer Capacity, 2001-2005**



Source: Table 12 of this report.

Although geothermal capacity increased by only 130 MW during 2005, there are proposals to greatly expand the geothermal resource base to be exploited. These proposals are based on a recent study commissioned by the U.S. Department of Energy, in which scientists at the Massachusetts Institute of Technology concluded that the U.S. has 100,000 MW of “enhanced geothermal capacity” which it could develop by 2050.<sup>6</sup>

Nevada and Arizona had the largest solar renewable portfolio standard requirements in place during 2005, and this is reflected in future plans for solar-electric generating plants. During 2007, Nevada Solar One, located south of Las Vegas near Boulder City, Nevada, will become the largest solar/photovoltaic plant to be operating anywhere in the world during the past 15 years. This 64-megawatt power plant is being developed by the North Carolina-based company Solargenix. During 2005, however, only a single new PV plant was reported to EIA as having gone into operation, the 1-MW Saguaro plant in Arizona.<sup>7</sup>

<sup>3</sup> Energy Information Administration, Monthly Energy Review January 2007 (Washington, DC, January 2007), Table 7.2a, p. 99.

<sup>4</sup> Energy Information Administration, Electric Power Annual 2005 (Washington, DC, Revised November 2006), Table 2.1.

<sup>5</sup> Without the extension the federal renewable production tax credit would have expired at the end of 2007. This provides a 1.9 cent per kilowatthour (adjusted for inflation) tax credit for electricity generated in the first ten years of a project’s operation. Technologies that qualify are wind, solar, geothermal and “closed-loop” bioenergy facilities. Other technologies such as “open-loop” biomass, incremental hydropower, small irrigation systems, landfill gas, and municipal solid waste receive a lesser credit.

<sup>6</sup> “The Future of Geothermal Energy,” prepared for the U.S. Department of Energy by the Massachusetts Institute of Technology. See [http://www1.eere.energy.gov/geothermal/future\\_geothermal.html](http://www1.eere.energy.gov/geothermal/future_geothermal.html). The U.S. Department of Energy has broadly defined Enhanced (or “engineered”) Geothermal Systems as engineered reservoirs that have been created to extract economical amounts of heat from low permeability and/or porosity geothermal resources. This includes all geothermal resources that are not currently in commercial production (e.g., the Geysers) and that require stimulation or enhancement.

<sup>7</sup> The EIA collects data only for those plants that have a capacity of 1 megawatt or more.



Vermont’s renewable portfolio goal is for the state’s electric utilities to meet growth in electricity demand between 2005 and 2012 by using energy efficiency and renewable energy resources. If Vermont’s voluntary goal is not achieved by 2012, it will become mandatory in 2013. Washington already provided 72.8 percent of total generation from renewable energy sources, including a large share from conventional hydro in 2005. Washington’s new Initiative Measure 937 would require investor-owned utilities to draw on new renewable energy sources for 15 percent of their electrical supply by 2020.

In addition, there was a flurry of activity in several states to strengthen existing standards during 2006. Arizona passed new rules for utilities to draw on renewable energy for 15 percent of their electricity supply by 2025. For 2006, the Arizona requirement was just 1.25 percent. New Jersey approved regulations to extend the renewable portfolio standard from 4 percent in 2008 to 20 percent in 2020 and expand the market for solar energy. Wisconsin significantly increased its standard from 2.2 percent in 2010 to 10 percent by 2015.

## Energy Consumption Revisions

### Biomass

#### *Transportation Sector*

The EIA has expanded its coverage of biofuels to include biodiesel fuel, whose consumption has grown from 1 trillion btu in 2001 to 11 trillion btu in 2005 (Table 2). These estimates are based on production data collected by the US Department of Agriculture Commodity Credit Corporation’s Bioenergy Program, which ended in December 2005. The EIA forecast in the Annual Energy Outlook 2007 indicates that consumption of biodiesel, which is presently primarily made from soy bean oil, will continue to expand in the future.

#### *Industrial Sector*

The EIA has added coverage of biorefineries and biofuels to include: (1) the energy in feedstocks lost in the production of ethanol and biodiesel and (2) energy in the coproducts of ethanol and biodiesel production. In the case of ethanol, this adds almost 241 trillion btu to 2005 industrial sector biomass consumption and for biodiesel almost one-half trillion btu (Table 2). Since no data is currently collected in EIA on feedstock inputs to biorefineries, loss and coproduct data are estimates. The ethanol factors used to estimate apparent feedstocks and yields are extrapolated from data reported by the US Department of Agriculture in its 1998 and 2002 issues of the report, U.S. Ethanol Cost-of-Production Survey. The

biodiesel factors used to estimate apparent feedstocks and yields are based on research and analysis conducted by the National Renewable Energy Laboratory.

#### *Residential Sector*

Since the last issue of this report, EIA conducted a review of its residential sector wood estimates and found there were inconsistencies between years in the approach taken. Baseline information is collected only once every three or four years in the EIA’s Residential Energy Consumption Survey (RECS). Adjustments are made using changes in heating degree days to obtain estimates for the missing years. In the revised estimates here, adjustments are applied to previous year’s estimates using regional heating degree days. Previously, this had been done inconsistently (only a few years had used regional heating degree days), and an additional small adjustment had been taken for wood pellet fuels which resulted in double counting in some years. In 2004 the revision resulted in an estimate of 410 trillion btu of wood consumption in the residential sector compared to 332 trillion btu (Table H1). Using regional heating degree days instead of national heating degree days accounts for most of the difference.

**Table H1. Residential Sector Wood Energy Consumption, 2001-2005 (Quadrillion Btu)**

Approach	2001	2002	2003	2004	2005
Old Basis	0.370	0.313	0.359	0.332	NA
New Basis	0.370	0.380	0.400	0.410	0.420

NA=Not Applicable.

Source: Old Basis: Energy Information Administration, Renewable Energy Trends 2004 (Washington, DC, August 2005), Table 2. New Basis: Residential sector biomass in Table 2 of this report.

#### *Commercial Sector*

Previously, the EIA estimates of commercial sector wood energy consumption were based on an assumption about the share of total wood energy used by the commercial sector. A review of available information supported exploration of wood data reported in EIA’s Commercial Building Energy Consumption Survey (CBECS) conducted every three or four years and led to a revision in EIA’s methodology. Using CBECS estimates of the square footage of commercial floor space heated by wood and an average number of btus required to heat a square foot, EIA derived estimates of wood consumption for the commercial sector in CBECS years.

Changes in heating degree days are applied to the average consumption in the four CBECS years available and used to make calculations for the non-CBECS years. The revisions resulted in an estimate of almost 70 trillion btu of wood energy consumed in the commercial sector in 2004 compared to the 41 trillion btu previously estimated (Table H2).

**Table H2. Commercial Sector Wood/Wood Waste Energy Consumption, 2001-2005 (Quadrillion Btu)**

Approach	2001	2002	2003	2004	2005
Old Basis	0.040	0.039	0.040	0.041	NA
New Basis	0.067	0.069	0.071	0.070	0.070

NA=Not Applicable.  
 Note: Includes small amounts of wood/wood waste consumed for power generation.  
 Source: Old Basis: Energy Information Administration, Renewable Energy Trends 2004 (Washington, DC, August 2005), Table 2. New Basis: Commercial sector wood/wood waste in Table 2 of this report.

## Geothermal

EIA made small revisions to its estimates of non-electric energy as a result of revisions made by the Oregon Geo-Heat Institute, which tracks energy consumed by geothermal heat pumps and for direct heat applications (e.g., crop drying).

**Table 1. U.S. Energy Consumption by Energy Source, 2001-2005  
(Quadrillion Btu)**

Energy Source	2001	2002	2003	2004	2005
Total <sup>a</sup>	96.563	98.101	98.450	100.586	100.942
Fossil Fuels	83.138	83.994	84.386	86.191	86.451
Coal	21.914	21.904	22.321	22.466	22.785
Coal Coke Net Imports	0.029	0.061	0.051	0.138	0.044
Natural Gas <sup>b</sup>	22.861	23.628	22.967	22.993	22.886
Petroleum <sup>c</sup>	38.333	38.401	39.047	40.594	40.735
Electricity Net Imports	0.075	0.072	0.022	0.039	0.084
Nuclear Electric Power	8.033	8.143	7.959	8.222	8.160
Renewable Energy	5.465	6.067	6.321	6.433	6.588
Conventional Hydroelectric	2.242	2.689	2.825	2.690	2.703
Geothermal Energy	0.311	0.328	0.331	0.341	0.343
Biomass <sup>d</sup>	2.777	2.880	2.988	3.196	3.298
Solar Energy	0.065	0.064	0.064	0.064	0.066
Wind Energy	0.070	0.105	0.115	0.142	0.178

<sup>a</sup> Ethanol blended into motor gasoline is included in both "Petroleum" and "Biomass," but is counted only once in total consumption.

<sup>b</sup> Includes supplemental gaseous fuels.

<sup>c</sup> Petroleum products supplied, including natural gas plant liquids and crude oil burned as fuel.

<sup>d</sup> Biomass includes: black liquor, wood/wood waste liquids, wood/wood waste solids, municipal solid waste (MSW), landfill gas, agriculture byproducts/crops, sludge waste, tires, biodiesel, ethanol, losses and coproducts from production of biodiesel and ethanol, and other biomass solids, liquids and gases.

Note: Data revisions are discussed in Highlights section. Totals may not equal sum of components due to independent rounding.

Sources: Non-renewable energy: Energy Information Administration (EIA), Monthly Energy Review (MER) January 2007, DOE/EIA-0035 (2007/01) (Washington, DC, January 2007,) Tables 1.3 and 1.4. Renewable Energy: Table 2 of this report.

**Table 2. Renewable Energy Consumption by Energy Use Sector and Energy Source, 2001-2005 (Quadrillion Btu)**

Sector and Source	2001	2002	2003	2004	2005
Total	5.465	6.067	6.321	6.433	6.588
Residential	0.439	0.449	0.471	0.483	0.497
Biomass	0.370	0.380	0.400	0.410	0.420
Geothermal	0.009	0.010	0.013	0.014	0.016
Solar <sup>a</sup>	0.060	0.059	0.058	0.059	0.061
Commercial	0.115	0.120	0.131	0.139	0.139
Biomass	0.106	0.111	0.119	0.126	0.124
Wood/Wood Waste	0.067	0.069	0.071	0.070	0.070
MSW/Landfill Gas	0.035	0.037	0.042	0.048	0.047
Other Biomass <sup>b</sup>	0.004	0.005	0.006	0.008	0.007
Geothermal	0.008	0.009	0.011	0.012	0.014
Conventional Hydroelectric	0.001	*	0.001	0.001	0.001
Industrial	1.740	1.741	1.753	1.885	1.912
Biomass	1.703	1.697	1.707	1.848	1.875
Wood/Wood Waste	1.443	1.396	1.363	1.476	1.452
Biofuels Losses and Coproducts <sup>c</sup>	0.110	0.133	0.174	0.211	0.241
Biodiesel Feedstock	*	*	*	*	*
Ethanol Feedstock	0.110	0.133	0.174	0.210	0.241
MSW/Landfill Gas	0.074	0.087	0.085	0.086	0.093
Other Biomass <sup>b</sup>	0.076	0.081	0.085	0.076	0.090
Geothermal	0.005	0.005	0.003	0.004	0.004
Conventional Hydroelectric	0.033	0.039	0.043	0.033	0.032
Transportation					
Biofuels	0.148	0.176	0.240	0.303	0.353
Biodiesel <sup>d</sup>	0.001	0.001	0.002	0.003	0.011
Ethanol <sup>e</sup>	0.147	0.175	0.238	0.299	0.342
Electric Power <sup>f</sup>	3.023	3.581	3.725	3.625	3.688
Biomass	0.450	0.516	0.522	0.509	0.526
Wood/Wood Waste	0.126	0.150	0.167	0.165	0.185
MSW/Landfill Gas	0.310	0.343	0.314	0.309	0.307
Other Biomass <sup>b</sup>	0.014	0.022	0.041	0.036	0.033
Geothermal	0.289	0.305	0.303	0.311	0.309
Conventional Hydroelectric	2.209	2.650	2.781	2.656	2.670
Solar	0.006	0.006	0.005	0.006	0.006
Wind	0.070	0.105	0.115	0.142	0.178

<sup>a</sup> Includes small amounts of distributed solar thermal and photovoltaic energy used in the commercial, industrial and electric power sectors.

<sup>b</sup> Agriculture byproducts/crops, sludge waste, tires, and other biomass solids, liquids and gases.

<sup>c</sup> Losses and coproducts from the production of biodiesel and ethanol.

<sup>d</sup> Biodiesel primarily derived from soy bean oil.

<sup>e</sup> Ethanol primarily derived from corn. Includes small amounts of ethanol consumed in the commercial and industrial sectors.

<sup>f</sup> The electric power sector comprises electricity-only and combined-heat-power (CHP) plants within North American Classification System (NAICS) 22 category whose primary business is to sell electricity, or electricity and heat, to the public.

\*=Less than 500 billion Btu.

Note: Data revisions are discussed in the Highlights section. Totals may not equal sum of components due to independent rounding.

Sources: Analysis conducted by Energy Information Administration, Office of Coal, Nuclear, Electric, and Alternate Fuels and specific sources described as follows. Residential: Energy Information Administration, Form EIA-457A/G, "Residential Energy Consumption Survey;" Oregon Institute of Technology, Geo-Heat Center; and Energy Information Administration, Form EIA-63-A, "Annual Solar Thermal Collector Manufacturers Survey" and Form EIA-63B, "Annual Photovoltaic Module/Cell Manufacturers Survey." Commercial: Energy Information Administration, Form EIA-906, "Power Plant Report", "Form EIA-920, "Combined Heat and Power Plant Report;" and Oregon Institute of Technology, Geo-Heat Center. Industrial: Energy Information Administration, Form EIA-846 (A, B, C) "Manufacturing Energy Consumption Survey," Form EIA-906, "Power Plant Report" and Form EIA-920, "Combined Heat and Power Plant Report;" Oregon Institute of Technology, Geo-Heat Center; Government Advisory Associates, Resource Recovery Yearbook and Methane Recovery Yearbook; U.S. Environmental Protection Agency Landfill Methane Outreach Program estimates; and losses and coproducts from the production of biodiesel and ethanol calculated as the difference between energy in feedstocks and production.

Transportation: Biodiesel: U.S. Department of Agriculture, Commodity Credit Corporation, Bioenergy Program estimates of production assigned to consumption and Ethanol: 2001-2004: EIA, Petroleum Supply Annual, Tables 2 and 16. Calculated as ten percent of oxygenated finished motor gasoline field production (Table 2) plus fuel ethanol refinery input (Table 16).

2005: EIA Petroleum Supply Annual 2005, Tables 1 and 15. Calculated as motor gasoline blending components adjustments (Table 1), plus finished motor gasoline adjustments (Table 1), plus fuel ethanol refinery and blender net inputs (Table 15).

Electric Power: Energy Information Administration, Form EIA-906, "Power Plant Report" and Form EIA-920, "Combined Heat and Power Plant Report."

**Table 3. Renewable Energy Consumption for Electricity Generation by Energy Use Sector and Energy Source, 2001-2005 (Quadrillion Btu)**

Sector/Source	2001	2002	2003	2004	2005
Total	3.439	4.109	4.150	4.073	4.063
Biomass	0.833	1.004	0.902	0.924	0.868
Wood/Wood Waste	0.486	0.605	0.519	0.534	0.482
MSW/Landfill Gas	0.323	0.360	0.335	0.342	0.339
Other Biomass <sup>a</sup>	0.023	0.039	0.048	0.048	0.046
Geothermal	0.289	0.305	0.303	0.311	0.309
Conventional Hydroelectric	2.242	2.689	2.825	2.690	2.703
Solar	0.006	0.006	0.005	0.006	0.006
Wind	0.070	0.105	0.115	0.142	0.178
Commercial	0.023	0.029	0.031	0.037	0.040
Biomass	0.023	0.029	0.031	0.036	0.039
Wood/Wood Waste	*	*	*	0.001	0.001
MSW/Landfill Gas	0.019	0.024	0.026	0.031	0.032
Other Biomass <sup>a</sup>	0.004	0.004	0.005	0.005	0.006
Conventional Hydroelectric	0.001	*	0.001	0.001	0.001
Industrial	0.412	0.520	0.422	0.423	0.351
Biomass	0.380	0.481	0.379	0.391	0.319
Wood/Wood Waste	0.370	0.464	0.362	0.376	0.306
MSW/Landfill Gas	0.003	0.001	0.002	0.004	0.003
Other Biomass <sup>a</sup>	0.007	0.016	0.015	0.011	0.011
Conventional Hydroelectric	0.033	0.039	0.043	0.033	0.032
Electric Power <sup>b</sup>	3.003	3.560	3.697	3.613	3.673
Biomass	0.430	0.494	0.493	0.498	0.510
Wood/Wood Waste	0.116	0.141	0.156	0.157	0.176
MSW/Landfill Gas	0.301	0.334	0.308	0.308	0.304
Other Biomass <sup>a</sup>	0.013	0.019	0.029	0.033	0.030
Geothermal	0.289	0.305	0.303	0.311	0.309
Conventional Hydroelectric	2.209	2.650	2.781	2.656	2.670
Solar	0.006	0.006	0.005	0.006	0.006
Wind	0.070	0.105	0.115	0.142	0.178

<sup>a</sup> Agriculture byproducts/crops, sludge waste, tires, and other biomass solids, liquids and gases.

<sup>b</sup> The electric power sector comprises electricity-only and combined-heat-power (CHP) plants within North American Classification System (NAICS) 22 category whose primary business is to sell electricity, or electricity and heat, to the public.

\* =Less than 500 billion Btu.

Note: Data revisions are discussed in the Highlights section. Totals may not add due to independent rounding.

Sources: Analysis conducted by Energy Information Administration, Office of Coal, Nuclear, Electric, and Alternate Fuels and the following specific sources: Energy Information Administration, Form EIA-906, "Power Plant Report," and Form EIA-920, "Combined Heat and Power Plant Report."

**Table 4. Renewable Energy Consumption for Nonelectric Use by Energy Use Sector and Energy Source, 2001-2005 (Quadrillion Btu)**

Sector/Source	2001	2002	2003	2004	2005
Total	2.027	1.958	2.171	2.360	2.525
Biomass	1.944	1.876	2.085	2.272	2.430
Wood	1.520	1.390	1.483	1.588	1.645
MSW/Landfill Gas	0.095	0.108	0.105	0.100	0.108
Other Biomass <sup>a</sup>	0.071	0.069	0.083	0.071	0.084
Biofuels <sup>b</sup>	0.258	0.309	0.414	0.513	0.594
Geothermal	0.022	0.024	0.027	0.030	0.034
Solar <sup>c</sup>	0.060	0.059	0.058	0.059	0.061
Residential	0.439	0.449	0.471	0.483	0.497
Biomass	0.370	0.380	0.400	0.410	0.420
Wood	0.370	0.380	0.400	0.410	0.420
Geothermal	0.009	0.010	0.013	0.014	0.016
Solar <sup>c</sup>	0.060	0.059	0.058	0.059	0.061
Commercial	0.092	0.091	0.099	0.102	0.099
Biomass	0.083	0.082	0.088	0.090	0.085
Wood	0.067	0.068	0.071	0.070	0.069
MSW/Landfill Gas	0.016	0.013	0.016	0.017	0.015
Other Biomass <sup>a</sup>	0.001	0.001	0.001	0.003	0.002
Geothermal	0.008	0.009	0.011	0.012	0.014
Industrial	1.328	1.221	1.331	1.461	1.561
Biomass	1.323	1.216	1.328	1.457	1.557
Wood	1.073	0.932	1.001	1.100	1.146
Biofuels Losses and Coproducts <sup>d</sup>	0.110	0.133	0.174	0.211	0.241
Biodiesel Feedstock	*	*	*	*	*
Ethanol Feedstock	0.110	0.133	0.174	0.210	0.241
MSW/Landfill Gas	0.071	0.086	0.083	0.082	0.090
Other Biomass <sup>a</sup>	0.069	0.065	0.070	0.065	0.079
Geothermal	0.005	0.005	0.003	0.004	0.004
Transportation					
Biofuels	0.148	0.176	0.240	0.303	0.353
Biodiesel <sup>e</sup>	0.001	0.001	0.002	0.003	0.011
Ethanol <sup>f</sup>	0.147	0.175	0.238	0.299	0.342
Electric Power <sup>g</sup>	0.020	0.022	0.028	0.012	0.015
Biomass	0.020	0.022	0.028	0.012	0.015
Wood	0.010	0.010	0.011	0.008	0.009
MSW/Landfill Gas	0.008	0.009	0.006	0.001	0.003
Other Biomass <sup>a</sup>	0.001	0.003	0.012	0.003	0.003

<sup>a</sup> Agriculture byproducts/crops, sludge waste, tires, and other biomass solids, liquids and gases.

<sup>b</sup> Biofuels and biofuel losses and coproducts.

<sup>c</sup> Includes small amounts of distributed solar thermal and photovoltaic energy used in the commercial, industrial and electric power sectors.

<sup>d</sup> Losses and coproducts from the production of biodiesel and ethanol.

<sup>e</sup> Biodiesel primarily derived from soy bean oil.

<sup>f</sup> Ethanol primarily derived from corn. Includes small amounts of ethanol consumed in the commercial and industrial sectors.

<sup>g</sup> The electric power sector comprises electricity-only and combined-heat-power (CHP) plants within North American Classification System (NAICS) 22 category whose primary business is to sell electricity, or electricity and heat, to the public.

\*=Less than 500 billion Btu.

Note: Data revisions are discussed in the Highlights section. Totals may not equal sum of components due to independent rounding.

Sources: Analysis conducted by Energy Information Administration, Office of Coal, Nuclear, Electric, and Alternate Fuels and specific sources described as follows. Residential: Energy Information Administration, Form EIA-457A/G, "Residential Energy Consumption Survey;" Oregon Institute of Technology, Geo-Heat Center; and Energy Information Administration, Form EIA-63-A, "Annual Solar Thermal Collector Manufacturers Survey" and Form EIA-63B, "Annual Photovoltaic Module/Cell Manufacturers Survey." Commercial: Energy Information Administration, Form EIA-906, "Power Plant Report", "Form EIA-920, "Combined Heat and Power Plant Report;" and Oregon Institute of Technology, Geo-Heat Center. Industrial: Energy Information Administration, Form EIA-846 (A, B, C) "Manufacturing Energy Consumption Survey," Form EIA-906, "Power Plant Report" and Form EIA-920, "Combined Heat and Power Plant Report;" Oregon Institute of Technology, Geo-Heat Center; Government Advisory Associates, Resource Recovery Yearbook and Methane Recovery Yearbook; U.S. Environmental Protection Agency, Landfill Methane Outreach Program estimates; and losses and coproducts from the production of biodiesel and ethanol calculated as the difference between energy in feedstocks and production.

Transportation: Biodiesel: U.S. Department of Agriculture, Commodity Credit Corporation, Bioenergy Program estimates of production assigned to consumption and Ethanol: 2001-2004: EIA, Petroleum Supply Monthly, Tables 2 and 16. Calculated as ten percent of oxygenated finished motor gasoline field production (Table 2) plus fuel ethanol refinery input (Table 16).

2005: EIA Petroleum Supply Annual 2005, Tables 1 and 15. Calculated as motor gasoline blending components adjustments (Table 1), plus finished motor gasoline adjustments (Table 1), plus fuel ethanol refinery and blender net inputs (Table 15).

Electric Power: Energy Information Administration, Form EIA-906, "Power Plant Report" and Form EIA-920, "Combined Heat and Power Plant Report."

**Table 5a. Historical Renewable Energy Consumption by Sector and Energy Source, 1989-1999  
(Quadrillion Btu)**

Sector and Energy Source	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999
Total	6.391	6.206	6.238	5.993	6.262	6.155	6.705	7.168	7.178	6.657	6.681
Biomass	3.160	2.735	2.782	2.933	2.910	3.030	3.104	3.159	3.108	2.931	2.967
Wood	2.680	2.216	2.214	2.313	2.260	2.324	2.370	2.437	2.371	2.184	2.214
Waste <sup>a</sup>	0.354	0.408	0.440	0.473	0.479	0.515	0.531	0.577	0.551	0.542	0.540
Biofuels <sup>b</sup>	0.126	0.111	0.129	0.146	0.171	0.190	0.202	0.145	0.187	0.205	0.213
Geothermal	0.317	0.336	0.346	0.349	0.364	0.338	0.294	0.316	0.325	0.328	0.331
Hydroelectric	2.837	3.046	3.016	2.617	2.892	2.683	3.205	3.590	3.640	3.297	3.268
Solar <sup>c</sup>	0.055	0.060	0.063	0.064	0.066	0.069	0.070	0.071	0.070	0.070	0.069
Wind	0.022	0.029	0.031	0.030	0.031	0.036	0.033	0.033	0.034	0.031	0.046
Residential Sector	0.978	0.641	0.674	0.706	0.618	0.590	0.591	0.612	0.503	0.452	0.462
Biomass	0.920	0.580	0.610	0.640	0.550	0.520	0.520	0.540	0.430	0.380	0.390
Wood	0.920	0.580	0.610	0.640	0.550	0.520	0.520	0.540	0.430	0.380	0.390
Geothermal	0.005	0.006	0.006	0.006	0.007	0.006	0.007	0.007	0.008	0.008	0.009
Solar <sup>c</sup>	0.053	0.056	0.058	0.060	0.062	0.064	0.065	0.065	0.065	0.065	0.064
Commercial Sector	0.102	0.098	0.099	0.109	0.113	0.111	0.118	0.135	0.138	0.127	0.128
Biomass	0.098	0.094	0.095	0.104	0.109	0.106	0.113	0.129	0.131	0.118	0.121
Wood	0.076	0.066	0.068	0.072	0.076	0.072	0.072	0.076	0.073	0.064	0.067
Waste <sup>a</sup>	0.022	0.028	0.026	0.032	0.033	0.035	0.040	0.053	0.058	0.054	0.054
Geothermal	0.003	0.003	0.003	0.003	0.003	0.004	0.005	0.005	0.006	0.007	0.007
Hydroelectric	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001
Industrial Sector	1.869	1.715	1.682	1.735	1.771	1.926	1.991	2.032	2.057	1.929	1.935
Biomass	1.839	1.682	1.650	1.703	1.739	1.861	1.933	1.968	1.996	1.872	1.882
Wood	1.584	1.442	1.410	1.461	1.484	1.580	1.652	1.683	1.731	1.603	1.620
Biofuels Losses and Coproducts <sup>d</sup>	0.055	0.048	0.056	0.063	0.074	0.082	0.086	0.061	0.081	0.088	0.092
Waste <sup>a</sup>	0.200	0.192	0.185	0.179	0.181	0.199	0.195	0.224	0.184	0.180	0.171
Geothermal	0.002	0.002	0.002	0.002	0.002	0.003	0.003	0.003	0.003	0.003	0.004
Hydroelectric	0.028	0.031	0.030	0.031	0.030	0.062	0.055	0.061	0.058	0.055	0.049
Transportation Sector											
Biofuels <sup>e</sup>	0.071	0.063	0.073	0.083	0.097	0.109	0.117	0.084	0.106	0.117	0.122
Electric Power Sector <sup>f</sup>	3.372	3.689	3.710	3.360	3.662	3.420	3.889	4.305	4.375	4.032	4.034
Electric Utilities	2.983	3.151	3.114	2.712	2.953	2.714	3.173	3.553	3.620	3.279	3.123
Biomass	0.020	0.022	0.021	0.022	0.021	0.021	0.017	0.020	0.020	0.021	0.020
Wood	0.010	0.008	0.008	0.008	0.009	0.008	0.007	0.008	0.008	0.007	0.007
Waste <sup>a</sup>	0.010	0.013	0.014	0.013	0.011	0.013	0.010	0.012	0.013	0.013	0.013
Geothermal	0.197	0.181	0.170	0.169	0.158	0.145	0.099	0.110	0.115	0.109	0.036
Hydroelectric	2.765	2.948	2.923	2.521	2.774	2.549	3.056	3.423	3.485	3.149	3.067
Solar	*	*	*	*	*	*	*	*	*	*	*
Wind	*	*	*	*	*	*	*	*	*	*	*
Independent Power Producers	0.389	0.538	0.596	0.648	0.709	0.705	0.716	0.752	0.754	0.753	0.910
Biomass	0.211	0.295	0.333	0.381	0.394	0.413	0.405	0.418	0.426	0.424	0.433
Wood	0.089	0.120	0.118	0.132	0.141	0.144	0.119	0.130	0.129	0.129	0.131
Waste <sup>a</sup>	0.122	0.175	0.215	0.249	0.253	0.269	0.286	0.288	0.296	0.294	0.302
Geothermal	0.111	0.145	0.165	0.168	0.193	0.180	0.181	0.191	0.194	0.202	0.276
Hydroelectric	0.043	0.066	0.062	0.065	0.087	0.072	0.093	0.104	0.096	0.092	0.151
Solar	0.003	0.004	0.005	0.004	0.005	0.005	0.005	0.005	0.005	0.005	0.005
Wind	0.022	0.029	0.031	0.030	0.031	0.036	0.033	0.033	0.034	0.031	0.046

Footnotes at the end of table.

**Table 5b. Historical Renewable Energy Consumption by Sector and Energy Source, 2000-2005(Continued)**  
(Quadrillion Btu)

Sector and Energy Source	2000	2001	2002	2003	2004	2005
Total	6.264	5.465	6.067	6.321	6.433	6.588
Biomass	3.013	2.777	2.880	2.988	3.196	3.298
Wood	2.262	2.006	1.995	2.002	2.121	2.126
Waste <sup>a</sup>	0.511	0.514	0.576	0.571	0.562	0.577
Biofuels <sup>b</sup>	0.241	0.258	0.309	0.414	0.513	0.594
Geothermal	0.317	0.311	0.328	0.331	0.341	0.343
Hydroelectric	2.811	2.242	2.689	2.825	2.690	2.703
Solar <sup>c</sup>	0.066	0.065	0.064	0.064	0.064	0.066
Wind	0.057	0.070	0.105	0.115	0.142	0.178
Residential Sector	0.490	0.439	0.449	0.471	0.483	0.497
Biomass	0.420	0.370	0.380	0.400	0.410	0.420
Wood	0.420	0.370	0.380	0.400	0.410	0.420
Geothermal	0.009	0.009	0.010	0.013	0.014	0.016
Solar <sup>c</sup>	0.061	0.060	0.059	0.058	0.059	0.061
Commercial Sector	0.127	0.115	0.120	0.131	0.139	0.139
Biomass	0.119	0.106	0.111	0.119	0.126	0.124
Wood	0.071	0.067	0.069	0.071	0.070	0.070
Waste <sup>a</sup>	0.047	0.039	0.042	0.047	0.055	0.054
Geothermal	0.008	0.008	0.009	0.011	0.012	0.014
Hydroelectric	0.001	0.001	*	0.001	0.001	0.001
Industrial Sector	1.929	1.740	1.741	1.753	1.885	1.912
Biomass	1.882	1.703	1.697	1.707	1.848	1.875
Wood	1.636	1.443	1.396	1.363	1.476	1.452
Biofuels Losses and Coproducts <sup>d</sup>	0.101	0.110	0.133	0.174	0.211	0.241
Waste <sup>a</sup>	0.145	0.150	0.168	0.170	0.162	0.182
Geothermal	0.004	0.005	0.005	0.003	0.004	0.004
Hydroelectric	0.042	0.033	0.039	0.043	0.033	0.032
Transportation Sector						
Biofuels <sup>e</sup>	0.139	0.148	0.176	0.240	0.303	0.353
Electric Power Sector <sup>f</sup>	3.579	3.023	3.581	3.725	3.625	3.688
Electric Utilities	2.607	2.067	2.545	2.622	2.528	2.541
Biomass	0.021	0.019	0.049	0.036	0.036	0.046
Wood	0.007	0.006	0.011	0.017	0.020	0.027
Waste <sup>a</sup>	0.014	0.013	0.038	0.020	0.016	0.019
Geothermal	0.003	0.003	0.029	0.026	0.026	0.024
Hydroelectric	2.582	2.044	2.465	2.556	2.461	2.460
Solar	*	*	*	*	*	*
Wind	*	0.001	0.002	0.004	0.004	0.010
Independent Power Producers	0.972	0.956	1.036	1.103	1.097	1.147
Biomass	0.432	0.432	0.467	0.485	0.473	0.479
Wood	0.127	0.121	0.140	0.151	0.145	0.158
Waste <sup>a</sup>	0.305	0.311	0.327	0.335	0.328	0.322
Geothermal	0.293	0.286	0.275	0.277	0.285	0.285
Hydroelectric	0.185	0.165	0.185	0.224	0.196	0.210
Solar	0.005	0.006	0.006	0.005	0.006	0.005
Wind	0.057	0.068	0.103	0.111	0.138	0.168

Footnotes at the end of table.

Table 5b. Historical Renewable Energy Consumption by Sector and Energy Source, 2000-2005(Continued)  
(Quadrillion Btu)

<sup>a</sup> Municipal solid waste, landfill gases, agriculture byproducts/crops, sludge waste, tires, and other biomass solids, liquids and gases.

<sup>b</sup> Biofuels and biofuel losses and coproducts.

<sup>c</sup> Includes small amounts of distributed solar thermal and photovoltaic energy used in the commercial, industrial and electric power sectors.

<sup>d</sup> Losses and coproducts from production of biodiesel and ethanol.

<sup>e</sup> Biodiesel primarily derived from soy bean oil and ethanol primarily derived from corn. Includes small amounts of ethanol consumed in the commercial and industrial sectors.

<sup>f</sup> The electric power sector comprises electricity-only and combined-heat-power (CHP) plants within North American Classification System (NAICS) 22 category whose primary business is to sell electricity, or electricity and heat, to the public.

\*=Less than 500 billion Btu.

Note: Data revisions are discussed in the Highlights section. Totals may not equal sum of components due to independent rounding.

Sources: Analysis conducted by Energy Information Administration, Office of Coal, Nuclear, Electric, and Alternate Fuels and Specific sources described as follows. Residential: Energy Information Administration, Form EIA-457A/G, "Residential Energy Consumption Survey;" Oregon Institute of Technology, Geo-Heat Center and Energy Information Administration, Form EIA-63-A, "Annual Solar Thermal Collector Manufacturers Survey" and Form EIA-63B, "Annual Photovoltaic Module/Cell Manufacturers Survey." Commercial: Energy Information Administration, Form EIA-867, "Annual Nonutility Power Producer Report," Form EIA-860B, "Annual Electric Generator Report - Nonutility," Form EIA-906, "Power Plant Report," Form EIA-920, "Combined Heat and Power Plant Report," and Oregon Institute of Technology, Geo-Heat Center. Industrial: Energy Information Administration, Form EIA-846 (A,B,C) "Manufacturing Energy Consumption Survey," Form EIA-867, "Annual Nonutility Power Producer Report," Form EIA-860B, "Annual Electric Generator Report - Nonutility," Form EIA-906, "Power Plant Report", and Form EIA-902, "Combined Heat and Power Plant Report," Oregon Institute of Technology, Geo-Heat Center; Government Advisory Associates, *Resource Recovery Yearbook and Methane Recovery Yearbook*; U.S. Environmental Protection Agency, Landfill Methane Outreach Program estimates; and losses and coproducts from the production of biodiesel and ethanol calculated as the difference between energy in feedstocks and production.

Transportation: Biodiesel: U.S. Department of Agriculture, Commodity Credit Corporation, Bioenergy Program estimates of production assigned to consumption and Ethanol: 1989: EIA, *Estimates of U.S. Biofuels Consumption 1990*, Table 10, 1990-1992: EIA, *Estimates of U.S. Biomass Energy Consumption 1992*, Table D2, 1993-2004: EIA, *Petroleum Supply Annual*, Tables 2 and 16. Calculated

as ten percent of oxygenated finished motor gasoline field production (Table 2) plus fuel ethanol refinery input (Table 16).

2005: EIA, *Petroleum Supply Annual 2005*, Tables 1 and 15. Calculated as motor gasoline blending components adjustments (Table 1), plus finished motor gasoline adjustments (Table 1), plus fuel ethanol refinery and blender net inputs (Table 15).

Electric Power: Energy Information Administration, Form EIA-759, "Monthly Power Plant Report," Form EIA-867, "Annual Nonutility Power Producer Report," Form EIA-860B, "Annual Electric Generator Report - Nonutility," and Form EIA-906 "Monthly Power Plant Report," and Form EIA-920, "Combined Heat and Power Plant Report."

**Table 6. Biomass Energy Consumption by Energy Source and Energy Use Sector, 2001-2005 (Trillion Btu)**

Source/Sector	2001	2002	2003	2004	2005
Total	2,777	2,880	2,988	3,196	3,298
Wood Energy Total	2,006	1,995	2,002	2,121	2,126
Residential	370	380	400	410	420
Commercial	67	69	71	70	70
Industrial	1,443	1,396	1,363	1,476	1,452
Electric Power <sup>a</sup>	126	150	167	165	185
Waste Energy Total	514	576	571	562	577
MSW/Landfill Gas	419	467	440	442	447
Commercial	35	37	42	48	47
Industrial	74	87	85	86	93
Electric Power <sup>a</sup>	310	343	314	309	307
Other Biomass <sup>b</sup>	95	108	131	119	130
Commercial	4	5	6	8	7
Industrial	76	81	85	76	90
Electric Power <sup>a</sup>	14	22	41	36	33
Biofuels Total	258	309	414	513	594
Biodiesel Feedstock					
Industrial					
Losses and Coproducts <sup>c</sup>	*	*	*	*	*
Biodiesel					
Transportation <sup>d</sup>	1	1	2	3	11
Ethanol Feedstock					
Industrial					
Losses and Coproducts <sup>e</sup>	110	133	174	210	241
Ethanol					
Transportation <sup>f</sup>	147	175	238	299	342

<sup>a</sup> The electric power sector comprises electricity-only and combined-heat-power (CHP) within the North American Industry Classification System (NAICS)22 category whose primary business is to sell electricity, or electricity and heat, to the public.

<sup>b</sup> Agriculture byproducts/crops, sludge waste, tires, and other biomass solids, liquids and gases.

<sup>c</sup> Losses and coproducts from production of biodiesel.

<sup>d</sup> Biodiesel primarily derived from soy bean oil.

<sup>e</sup> Losses and coproducts from the production of ethanol.

<sup>f</sup> Ethanol primarily derived from corn.

\*=Less than 500 billion Btu.

Note: Data revisions are discussed in the Highlights section. Totals may not equal sum. of components due to independent rounding.

Sources: Table 2 of this report.

**Table 7. Waste Energy Consumption by Type of Waste and Energy Use Sector, 2005  
(Trillion Btu)**

Type	Sector				Total
	Commercial	Industrial	Electric Power		
			Electric Utilities	Independent Power Producers	
Total	54	182	19	322	577
MSW and Landfill Gas	47	93	14	293	447
MSW	44	12	8	234	299
Landfill Gas	3	81	6	59	148
Other Biomass <sup>a</sup>	7	90	5	28	130

<sup>a</sup>Agriculture byproducts/crops, sludge waste, tires, and other biomass solids, liquids and gases.

MSW = Municipal Solid Waste

Note: Totals may not equal sum of components due to independent rounding.

Sources: Energy Information Administration, Form EIA-906, "Power Plant Report,"

Form EIA-920, "Combined Heat and Power Plant Report,"

and Government Advisory Associates, Resource Recovery Yearbook

and Methane Recovery Yearbook; U.S. Environmental Protection Agency,

Landfill Methane Outreach Program estimates;

and analysis conducted by the Energy Information

Administration, Office of Coal, Nuclear, Electric and Alternate Fuels.

**Table 8. Industrial Biomass Energy Consumption and Electricity Net Generation by Primary Purpose of Business and Energy Source, 2005**

Industry	Energy Source	Biomass Energy Consumption (Trillion Btus)			Net Generation (Million Kilowatthours)
		Total	For Electricity	For Useful Thermal Output	
Total		1,875.335	318.702	1,556.633	29,208
Agriculture, Forestry and Mining	Total	9.889	1.989	7.901	174
	Agricultural Byproducts/Crops	9.889	1.989	7.901	174
Manufacturing	Total	1,781.201	316.714	1,464.488	29,034
Food and Kindred Products	Total	39.148	1.371	37.777	139
	Agricultural Byproducts/Crops	35.116	0.877	34.239	44
	Other Biomass Gases	0.730	0.050	0.680	9
	Other Biomass Liquids	0.040	0.040	-	5
	Tires	0.570	0.111	0.458	22
	Wood/Wood Waste Solids	2.692	0.293	2.399	59
Lumber	Total	241.388	12.085	229.304	1,426
	Sludge Waste	0.126	0.026	0.100	3
	Wood/Wood Waste Solids	241.263	12.059	229.204	1,423
Paper and Allied Products	Total	1,219.899	299.851	920.048	27,252
	Agricultural Byproducts/Crops	1.331	0.027	1.304	5
	Black Liquor	859.994	205.199	654.795	17,899
	Landfill Gas	0.081	0.015	0.066	2
	Municipal Solid Waste	2.773	0.555	2.218	45
	Other Biomass Gases	0.252	0.017	0.235	3
	Other Biomass Liquids	0.017	0.003	0.013	1
	Other Biomass Solids	4.479	0.798	3.681	158
	Sludge Waste	7.263	2.881	4.382	191
	Tires	11.310	3.070	8.240	269
	Wood/Wood Waste Liquids	8.057	1.695	6.362	197
	Wood/Wood Waste Solids	324.343	85.591	238.752	8,481
	Chemicals and Allied Products	Total	4.127	1.300	2.827
Landfill Gas		0.168	0.069	0.099	3
Municipal Solid Waste		1.459	0.686	0.773	22
Other Biomass Liquids		0.062	0.010	0.052	2
Other Biomass Solids		0.004	-	0.004	-
Sludge Waste		0.406	-	0.406	-
Wood/Wood Waste Solids		2.030	0.536	1.494	13
Biorefineries	Total	241.320	-	241.320	-
	Biofuel Losses and Coproducts <sup>a</sup>				
	Biodiesel Feedstock	0.458	-	0.458	-
	Ethanol Feedstock	240.862	-	240.862	-
Other <sup>b</sup>	Total	35.319	2.107	33.212	176
Nonspecified <sup>c</sup>	Total	84.244	-	84.244	-
	Landfill Gas	79.103	-	79.103	-
	Municipal Solid Waste	5.141	-	5.141	-

<sup>a</sup> Losses and coproducts from production of biodiesel and ethanol calculated as the difference between energy in feedstocks and production.

<sup>b</sup> Other includes Apparel; Petroleum Refining; Rubber and Misc. Plastic Products; Transportation Equipment; Stone, Clay, Glass, and Concrete Products; Furniture and Fixtures; and related industries.

<sup>c</sup> Primary purpose of business is not specified.

- = Not Applicable.

Note: Totals may not equal sum of components due to independent rounding.

Sources: Energy Information Administration, Form EIA-906, "Power Plant Report," and Form-920 "Combined Heat and Power Report;" Government Advisory Associates, Resource Recovery Yearbook and Methane Recovery Yearbook; U.S. Environmental Protection Agency, Landfill Methane Outreach Program estimates; and analysis conducted by the Energy Information Administration, Office of Coal, Nuclear, Electric and Alternate Fuels.

Table 9. Net Generation and Fuel Consumption at Power Plants Consuming Coal and Biomass by State and Plant Name, 2005

State	Company Name	Plant I.D.	Plant Name	County	Net Electricity Generation (Thousand Kilowatthours)	Total Energy Consumed (MMBTU)	Energy Consumed from Biomass (MMBTU)	Percent of Energy Consumed from		
								Biomass	Coal	Other
AL	Bowater Nwprt Coosa Pines Op	54216	U S Alliance Coosa Pines	Talladega	142,488	13,110,140	5,744,180	43.81	55.36	0.83
AL	DTE Energy Services	50407	Mobile Energy Services LLC	Mobile	387,965	6,425,852	3,370,564	52.45	41.04	6.51
AL	Georgia-Pacific Corp	10699	Georgia Pacific Naheola Mill	Choctaw	402,737	17,055,879	13,408,385	78.61	12.96	8.43
AL	International Paper Co	52140	International Paper Prattville Mill	Autauga	427,978	18,616,432	14,567,359	78.25	8.88	12.87
AL	Rock-Tenn Company	54763	Rock-Tenn Mill	Marengo	191,054	24,223,648	10,501,848	43.35	1.13	55.52
AL	Weyerhaeuser Co	54752	Weyerhaeuser Pine Hill Operations	Wilcox	497,132	15,617,618	11,473,623	73.47	11.1	15.43
AK	U S Air Force-Eielson AFB	50392	Eielson AFB Central Heat & Power Plant	Fairbanks North Star	83,000	2,823,917	12,740	0.45	99.17	0.38
AZ	Tucson Electric Power Co	126	H Wilson Sundt Generating Station	Pima	1,152,849	12,510,168	174,904	1.4	66.04	32.56
AR	Domtar Industries Inc	54104	Ashdown	Little River	809,243	26,704,660	21,002,865	78.65	11.91	9.44
CA	Air Products Energy Enterprise	10640	Stockton Cogen	San Joaquin	462,958	5,906,960	416,898	7.06	59.89	33.05
CA	Mt Poso Cogeneration Co	54626	Mt Poso Cogeneration	Kern	475,579	5,407,121	127,460	2.36	67.74	29.91
CO	Aquila, Inc.	462	W N Clark	Fremont	290,843	3,926,061	7,620	0.19	99.81	
CT	Covanta Mid-Connecticut Inc	54945	Covanta Mid-Connecticut Energy	Hartford	411,792	7,974,770	7,960,380	99.82	0.18	
FL	International Paper Co-Pensacola	50250	International Paper Pensacola	Escambia	374,014	17,345,114	14,029,583	80.88	13.1	6.01
FL	JEA	667	Northside Generating Station	Duval	4,976,838	50,213,325	50,541	0.1	15.12	84.78
FL	Jefferson Smurfit Corp	10202	Jefferson Smurfit Fernandina Beach	Nassau	581,192	20,651,236	12,914,831	62.54	30.55	6.91
FL	Orlando Utilities Comm	564	Stanton Energy Center	Orange	6,253,086	64,657,806	944,018	1.46	98.42	0.12
FL	Stone Container Corp-Panama Ci	50807	Stone Container Panama City Mill	Bay	243,381	16,444,075	13,041,443	79.31	11.74	8.95
FL	US Operating Services Company	10672	US Operating Services Co - Cedar Bay	Duval	1,945,826	23,205,526	77,534	0.33	99.42	0.24
GA	Georgia Pacific Corp	54101	Georgia Pacific Cedar Springs	Early	604,831	24,554,556	17,191,276	70.01	24.63	5.36
GA	Georgia-Pacific Corp - Savannah	10361	Savannah River Mill	Effingham	640,872	10,449,438	39,800	0.38	7.15	92.47
GA	Inland Paperboard & Package Inc	10426	Inland Paperboard Packaging Rome	Floyd	370,047	20,782,626	14,240,566	68.52	25.39	6.08
GA	International Paper Co	50398	International Paper Savannah Mill	Chatham	830,947	22,596,142	13,423,446	59.41	33.37	7.23
GA	International Paper Co-Augusta	54358	International Paper Augusta Mill	Richmond	465,539	25,008,372	17,799,825	71.18	18.79	10.03
GA	Riverwood Intl USA Inc	54464	Riverwood International Macon Mill	Bibb	245,377	12,098,827	9,065,736	74.93	12.77	12.29
GA	SP Newsprint Company	54004	SP Newsprint	Laurens	237,763	6,887,118	3,049,787	44.28	45.07	10.65
HI	AES Hawaii Inc	10673	AES Hawaii	Oahu	1,625,715	15,480,453	199,609	1.29	97.49	1.22
HI	Hawaiian Com & Sugar Co Ltd	10604	Hawaiian Comm & Sugar Puunene Mill	Maui	183,753	5,811,644	4,231,730	72.81	25.01	2.18
IL	Archer Daniels Midland Co	10865	Archer Daniels Midland Decatur	Macon	1,528,478	39,388,800	569,604	1.45	98.55	
IL	Dynegy Midwest Generation Inc	889	Baldwin Energy Complex	Randolph	12,618,528	126,173,357	175,758	0.14	99.77	0.09
IL	Springfield City of	963	Dallman	Sangamon	2,084,104	23,975,750	98,602	0.41	99.5	0.08
IL	Springfield City of	964	Lakeside	Sangamon	208,452	2,812,813	70,921	2.52	97.13	0.34
IA	Ames City of	1122	Ames Electric Services Power Plant	Story	506,131	6,575,890	298,471	4.54	95.14	0.32
IA	Interstate Power and Light Co	1073	Prairie Creek	Linn	918,004	9,897,250	155,570	1.57	97.99	0.44
IA	University of Iowa	54775	University of Iowa Main Power Plant	Johnson	84,634	3,443,773	589,747	17.13	74.25	8.63
KY	Owensboro City of	1374	Elmer Smith	Daviess	2,198,360	23,209,771	253,807	1.09	98.6	0.3
LA	IPC-Mansfield Mill	54091	Mansfield Mill	De Soto	777,313	25,699,719	20,528,166	79.88	3.46	16.66
LA	International Paper Co	54090	International Paper Louisiana Mill	Morehouse	355,303	25,967,936	22,702,242	87.42	3.67	8.9
LA	Temple-Inland Corp	54427	Gaylord Container Bogalusa	Washington	509,001	16,866,776	15,126,280	89.68	1.12	9.2
ME	NewPage Corporation	10495	Rumford Cogeneration	Oxford	728,420	16,777,657	12,998,505	77.48	22.44	0.09
ME	S D Warren Co. - Westbrook	50447	S D Warren Westbrook	Cumberland	421,998	7,252,607	3,834,375	52.87	38.97	8.17
MD	NewPage Corporation	50282	Luke Mill	Allegany	471,901	17,990,330	7,395,472	41.11	58.89	
MI	Decorative Panels International, Inc.	10149	Louisiana Pacific	Alpena	46,738	1,942,145	422,074	21.73	47.37	30.89
MI	International Paper Co-Quinnes	50251	International Paper Quinnesec Mich Mill	Dickinson	209,862	10,446,485	10,076,055	96.45	0.94	2.61
MI	MeadWestvaco Corp.	10208	Escanaba Paper Company	Delta	688,065	19,849,738	12,684,406	63.9	21.3	14.8
MI	S D Warren Co	50438	S D Warren Muskegon	Muskegon	199,569	6,023,088	1,813,439	30.11	65.97	3.92
MI	TES Filer City Station LP	50835	TES Filer City Station	Manistee	448,582	5,764,326	428,847	7.44	77.74	14.82
MI	Wyandotte Municipal Serv Comm	1866	Wyandotte	Wayne	313,968	4,548,820	738,966	16.25	83.21	0.54
MN	International Paper Co-Sartell	50252	International Paper Sartell Mill	Benton	119,593	2,821,101	491,062	17.41	71.4	11.19
MN	Minnesota Power Inc	1897	M L Hibbard	St Louis	76,127	1,402,405	322,806	23.02	76.73	0.25
MN	Minnesota Power Inc	10686	Rapids Energy Center	Itasca	132,074	2,898,959	1,911,078	65.92	26.35	7.72
MS	Weyerhaeuser Co	50184	Weyerhaeuser Columbus MS	Lowndes	644,858	19,035,561	18,279,671	96.03	1.31	2.66
MO	Anheuser-Busch Inc	10430	Anheuser Busch St Louis	St Louis City	104,258	3,878,943	315,967	8.15	87.74	4.12
MO	Aquila, Inc.	2098	Lake Road	Buchanan	605,789	7,288,483	114,521	1.57	96.97	1.46
MO	Aquila, Inc.	2094	Sibley	Jackson	2,880,026	30,801,020	274,340	0.89	99.05	0.06
MO	Empire District Electric Co	2076	Asbury	Gasper	1,369,663	15,474,326	187,992	1.21	98.74	0.05
MO	Hercules Incorporated	10207	Hercules Missouri Chemical Works	Pike	77,852	2,734,388	3,657	0.13	98.89	0.97
MO	Union Electric Co	2107	Sioux	St Charles	6,636,478	66,295,679	146,392	0.22	98.8	0.98

Footnotes at end of table.

Table 9. Net Generation and Fuel Consumption at Power Plants Consuming Coal and Biomass by State and Plant Name, 2005 (Continued)

State	Company Name	Plant I.D.	Plant Name	County	Net Electricity Generation (Thousand Kilowatthours)	Total Energy Consumed (MMBTU)	Energy Consumed from Biomass (MMBTU)	Percent of Energy Consumed from		
								Biomass	Coal	Other
MO	University of Missouri-Columbia	50969	University of Missouri Columbia	Boone	144,525	3,582,669	98,339	2.74	91.02	6.24
NY	AES Greenidge	2527	AES Greenidge LLC	Yates	893,636	10,271,415	75,456	0.73	99.02	0.24
NY	Black River Generation LLC	10464	Black River Generation	Jefferson	355,836	4,478,923	474,900	10.6	62.97	26.42
NY	Trigen-Syracuse Energy Corp	50651	Trigen Syracuse Energy	Onondaga	119,350	5,072,613	586,888	11.57	87.02	1.41
NY	WPS Power Development	50202	WPS Power Niagara	Niagara	304,228	3,950,298	1,124,480	28.47	46.12	25.42
NC	Blue Ridge Paper Products Inc	50244	Canton North Carolina	Haywood	308,870	20,869,323	9,886,342	47.37	51.37	1.26
NC	Corn Products Intl Inc	54618	Corn Products Winston Salem	Forsyth	62,361	2,863,306	2,692,004	94.02	4.89	1.1
NC	Green Power Energy Holdings Corporation	10381	Green Power Kenansville	Duplin	14,126	611,541	589,591	96.41	3.59	
NC	International Paper Co-Buckspt	50254	International Paper Roanoke Rapid NC	Halifax	134,281	10,212,119	7,178,826	70.3	24.61	5.1
NC	International Paper Co-Riegel	54656	International Paper Riegelwood Mill	Columbus	471,396	10,806,199	6,706,716	62.06	3.52	34.42
NC	Primary Energy of North Carolina LLC	10379	Primary Energy Roxboro	Person	203,410	2,755,347	516,113	18.73	81.27	
NC	Primary Energy of North Carolina LLC	10378	Primary Energy Southport	Brunswick	306,887	6,202,069	536,502	8.65	91.35	
NC	Weyerhaeuser Co	50189	Weyerhaeuser Plymouth NC	Martin	823,066	28,096,371	19,456,324	69.25	25.81	4.94
OH	Chillicothe Paper Inc	10244	Chillicothe Paper Inc	Ross	518,776	15,812,457	8,577,520	54.25	44.55	1.21
PA	Kimberly-Clark Corp	50410	Chester Operations	Delaware	372,016	6,329,892	1,043	0.02	46.58	53.4
PA	P H Glatfelter Co	50397	P H Glatfelter	York	649,234	17,484,232	8,609,528	49.24	50.12	0.64
PA	US Operating Services Company	50888	Northampton Generating Company	Northampton	777,946	9,159,311	149,648	1.63	75.37	22.99
PA	Weyerhaeuser	54638	Johnsontown Mill	Elk	312,017	9,362,644	5,176,622	55.29	42.94	1.77
SC	International Paper Co-Eastovr	52151	International Paper Eastover Facility	Richland	759,898	21,561,156	17,459,107	80.97	14.78	4.25
SC	International Paper Co-GT Mill	54087	International Paper Georgetown Mill	Georgetown	541,816	22,390,956	18,605,745	83.09	7.64	9.26
SC	Smurfit-Stone Container Enterprises Inc	50806	Stone Container Florence Mill	Florence	667,875	20,484,615	13,665,363	66.71	23.73	9.56
SC	South Carolina Electric&Gas Co	7737	Cogen South	Charleston	535,048	10,343,717	6,437,610	62.24	37.76	
SD	Otter Tail Power Co	6098	Big Stone	Grant	2,846,712	30,194,662	240	0	99.89	0.11
TN	Bowater Newsprint Calhoun Ops	50956	Bowater Newsprint Calhoun Operation	McMinn	434,579	22,693,002	17,646,793	77.76	20.44	1.8
TN	Eastman Chemical Co-TN Ops	50481	Tennessee Eastman Operations	Sullivan	1,248,883	42,902,532	405,685	0.95	97.32	1.73
TN	Packaging Corp of America	50296	Packaging Corp of America	Hardin	357,812	17,974,636	14,019,556	78	11.92	10.08
VA	Cogentrix of Richmond Inc	54081	Cogentrix of Richmond	City of Richmond	1,445,205	23,400,420	420,464	1.8	98.2	
VA	Dominion Virginia Power	10773	Altavista Power Station	Campbell	348,093	4,326,435	696	0.02	99.43	0.56
VA	Georgia Pacific Corp - Big Island Mill	50479	Georgia Pacific Big Island	Bedford	54,775	5,118,368	1,864,430	36.43	23.83	39.75
VA	International Paper	52152	International Paper Franklin Mill	Isle of Wight	680,665	36,945,448	26,196,698	70.91	15.21	13.88
VA	Smurfit-Stone Container Enterprises Inc	50813	Stone Container Hopewell Mill	Hopewell City	305,698	8,925,541	7,148,868	80.09	18.87	1.04
VA	Smurfit-Stone Container Enterprises, Inc	10017	West Point Mill	King William	562,561	18,034,409	13,902,417	77.09	17.26	5.65
VA	Westvaco Corp	50900	Covington Facility	Covington	595,329	31,433,752	13,786,601	43.86	44.26	11.89
WA	Weyerhaeuser Co	50187	Weyerhaeuser Longview WA	Cowlitz	292,117	16,724,688	13,586,317	81.24	6.9	11.87
WV	Monongahela Power Co	3942	Albright	Preston	1,067,772	12,308,892	5,494	0.04	99.5	0.46
WV	Monongahela Power Co	3946	Willow Island	Pleasants	634,413	7,403,915	139,318	1.88	97.54	0.58
WI	Domtar Industries Inc	50395	Georgia-Pacific Corp - Nekoosa Mill	Wood	199,999	6,708,158	2,863,544	42.69	47.83	9.48
WI	Manitowoc Public Utilities	4125	Manitowoc	Manitowoc	334,285	5,352,802	99,893	1.87	64.99	33.14
WI	Minergy Neenah LLC	56037	Minergy Neenah	Winnebago	43,362	3,181,884	1,101,420	34.62	65.38	
WI	Mosinee Paper Corp	50614	Mosinee Paper	Marathon	119,332	12,395,426	10,609,106	85.59	12.42	1.99
WI	Northern States Power Co	3982	Bay Front	Ashland	337,076	4,876,668	1,542,238	31.62	62.54	5.84
WI	Packaging Corp of America	50476	Packaging of America Tomahawk Mill	Lincoln	126,009	5,473,367	2,671,163	48.8	44.99	6.2
WI	State of Wisconsin	54408	Univ of Wisc Madison Charter Sreet Plant	Dane	51,012	4,226,311	251,958	5.96	85.9	8.13
WI	State of Wisconsin	54407	Waupun Correctional Central Heating Plt	Dodge	3,017	277,034	11,732	4.23	95.48	0.28
WI	Stora Enso North America	10234	Biron Mill	Wood	235,150	4,602,457	187,114	4.07	92.91	3.02
WI	Stora Enso North America	54857	Niagara Mill	Marinette	107,567	2,901,597	191,189	6.59	73.81	19.6
WI	Stora Enso North America	10476	Whiting Mill	Portage	23,007	1,610,452	253,396	15.73	73.7	10.57
WI	Stora Enso North America	10477	Wisconsin Rapids Pulp Mill	Wood	355,057	11,925,204	8,389,643	70.35	24.99	4.66
WI	Thilmany LLC	54098	International Paper Kaukauna Mill	Outagamie	199,958	7,727,406	3,589,498	46.45	38.9	14.65
WI	Wisconsin Power & Light Co	4050	Edgewater	Sheboygan	4,294,686	44,715,599	347,085	0.78	98.89	0.33
WI	Wisconsin Power & Light Co	4054	Nelson Dewey	Grant	1,390,001	15,511,995	105,865	0.68	80.13	19.19
Total					91,249,657	1,696,301,974	612,020,435	36.08	54.61	9.31

\* = Less than .005 percent.

MMBtu = One million British thermal units.

Note: State abbreviations are documented on the United States Postal Service website: [http://www.usps.com/ncsc/lookups/usps\\_abbreviations.htm](http://www.usps.com/ncsc/lookups/usps_abbreviations.htm).

Blank cell indicates the plant had no consumption or other energy to report.

Sources: Energy Information Administration, Form EIA-860, "Annual Electric Generator Report," Form EIA-906, "Power Plant Report," and Form EIA-920, "Combined Heat and Power Report."

**Table 10. Average Heat Content of Selected Biomass Fuels**

<b>Fuel Type</b>	<b>Heat Content</b>	<b>Units</b>
Agricultural Byproducts	8.248	Million Btu/Short Ton
Black Liquor	11.758	Million Btu/Short Ton
Digester Gas	0.619	Million Btu/Thousand Cubic Feet
Landfill Gas	0.490	Million Btu/Thousand Cubic Feet
Methane	0.841	Million Btu/Thousand Cubic Feet
Municipal Solid Waste	9.945	Million Btu/Short Ton
Paper Pellets	13.029	Million Btu/Short Ton
Peat	8.000	Million Btu/Short Ton
Railroad Ties	12.618	Million Btu/Short Ton
Sludge Waste	7.512	Million Btu/Short Ton
Sludge Wood	10.071	Million Btu/Short Ton
Solid Byproducts	25.830	Million Btu/Short Ton
Spent Sulfite Liquor	12.720	Million Btu/Short Ton
Tires	26.865	Million Btu/Short Ton
Utility Poles	12.500	Million Btu/Short Ton
Waste Alcohol	3.800	Million Btu/Barrel
Wood/Wood Waste	9.961	Million Btu/Short Ton

**Source: Energy Information Administration, Form EIA-860B (1999), Annual Electric Generator Report - Nonutility 1999.**

**Table 11. Electricity Net Generation From Renewable Energy by Energy Use Sector and Energy Source, 2001-2005  
(Thousand Kilowatthours)**

Sector/Source	2001	2002	2003	2004	2005
Total	294,946,101	351,250,925	363,216,799	358,825,775	365,253,632
Biomass	56,964,469	61,521,672	61,264,772	60,878,599	61,879,790
Wood/ Wood Waste	35,199,905	38,665,040	37,529,099	37,576,421	38,681,146
MSW/Landfill Gas	19,931,054	20,184,615	20,179,386	19,952,469	20,018,688
Other Biomass <sup>a</sup>	1,833,510	2,672,017	3,556,287	3,349,709	3,179,956
Geothermal	13,740,501	14,491,310	14,424,231	14,810,974	14,691,745
Conventional Hydroelectric	216,961,044	264,328,833	275,806,329	268,417,306	270,321,254
Solar	542,755	554,831	534,001	575,155	550,294
Wind	6,737,332	10,354,279	11,187,466	14,143,741	17,810,549
Commercial	1,548,113	1,597,470	1,966,052	2,426,114	2,508,115
Biomass	1,481,629	1,584,673	1,893,807	2,321,148	2,422,079
Wood/ Wood Waste	17,626	12,505	13,049	13,644	15,998
MSW/Landfill Gas	1,181,829	1,267,614	1,455,294	1,891,688	1,913,666
Other Biomass <sup>a</sup>	282,174	304,554	425,464	415,816	492,415
Conventional Hydroelectric	66,484	12,797	72,245	104,966	86,036
Industrial	30,848,318	34,572,015	33,223,295	32,213,951	32,403,405
Biomass	27,703,049	30,747,367	29,000,871	28,965,457	29,207,965
Wood/ Wood Waste	26,888,483	29,643,207	27,988,372	27,835,477	28,097,528
MSW/Landfill Gas	237,271	202,209	161,467	176,982	179,980
Other Biomass <sup>a</sup>	577,295	901,951	851,032	952,998	930,457
Conventional Hydroelectric	3,145,269	3,824,648	4,222,424	3,248,494	3,195,440
Electric Power <sup>b</sup>	262,549,670	315,081,440	328,027,452	324,185,710	330,342,112
Biomass	27,779,791	29,189,632	30,370,094	29,591,994	30,249,746
Wood/ Wood Waste	8,293,796	9,009,328	9,527,678	9,727,300	10,567,620
MSW/Landfill Gas	18,511,954	18,714,792	18,562,625	17,883,799	17,925,042
Other Biomass <sup>a</sup>	974,041	1,465,512	2,279,791	1,980,895	1,757,084
Geothermal	13,740,501	14,491,310	14,424,231	14,810,974	14,691,745
Conventional Hydroelectric	213,749,291	260,491,388	271,511,660	265,063,846	267,039,778
Solar	542,755	554,831	534,001	575,155	550,294
Wind	6,737,332	10,354,279	11,187,466	14,143,741	17,810,549

<sup>a</sup> Agriculture byproducts/crops, sludge waste, tires, and other biomass solids, liquids and gases.

<sup>b</sup> The electric power sector comprises electricity-only and combined-heat-power (CHP) plants within North American Classification System (NAICS) 22 category whose primary business is to sell electricity, or electricity and heat, to the public.

<sup>P</sup>=Preliminary.

Note: Data revisions are discussed in Highlights section. Totals may not add due to independent rounding.

Sources: Energy Information Administration, Form EIA-906, "Power Plant Report," and Form EIA-920, "Combined Heat and Power Plant Report."

**Table 12. U.S. Electric Net Summer Capacity, 2001-2005  
(Megawatts)**

Source	2001	2002	2003	2004	2005
Total	848,254	905,301	948,446	962,942	978,020
Renewable Total	95,096	96,111	96,893	96,403	98,791
Biomass	9,709	9,689	9,674	9,757	9,848
Wood/Wood Waste	5,882	5,844	5,871	6,182	6,193
MSW/Landfill Gas	3,292	3,330	3,304	3,055	3,055
Other Biomass <sup>a</sup>	535	515	499	520	600
Geothermal	2,216	2,252	2,133	2,152	2,285
Conventional Hydroelectric	78,916	79,356	78,694	77,641	77,541
Solar	392	397	397	398	411
Wind	3,864	4,417	5,995	6,456	8,706
Nonrenewable Total	753,158	809,191	851,553	866,539	879,228

<sup>a</sup> Agriculture byproducts/crops, sludge waste, tires, and other biomass solids, liquids and gases.

<sup>P</sup>=Preliminary.

Note: Data revisions are discussed in Highlights section. Totals may not equal sum of components due to independent rounding.  
Sources: Energy Information Administration, Form EIA-860, "Annual Electric Generator Report."

**Table 13. Renewable Electricity Net Generation by Energy Source and Census Division, 2005  
(Thousand Kilowatthours)**

Census Division	Geothermal	Conventional Hydroelectric	MSW / Landfill Gas	Other Biomass <sup>a</sup>	Solar	Wind	Wood / Wood Waste	Total
Total	14,691,745	270,321,254	20,018,688	3,179,956	550,294	17,810,549	38,681,146	365,253,632
New England		8,627,523	3,827,507	407,164		11,486	5,110,198	17,983,878
Middle Atlantic		28,045,810	5,606,383	143,952		387,231	1,225,006	35,408,382
East North Central		4,284,990	1,915,402	347,211		248,806	2,985,339	9,781,748
West North Central		8,192,781	805,165	148,403		4,130,491	649,416	13,926,256
South Atlantic		17,268,419	5,118,893	892,135		153,892	10,587,522	34,020,861
East South Central		22,415,315	92,857	58,143		3,339	6,145,707	28,715,361
West South Central		7,856,385	206,798	239,477		5,084,982	5,483,989	18,871,631
Mountain	1,447,509	29,415,041	51,741	42,189	13,581	2,288,128	654,791	33,912,980
Pacific Contiguous	13,022,639	142,654,860	2,102,865	727,757	536,713	5,494,973	5,838,797	170,378,604
Pacific Noncontiguous	221,597	1,560,130	291,077	173,525		7,221	381	2,253,931

<sup>a</sup> Agriculture byproducts/crops, sludge waste, tires, and other biomass solids, liquids and gases.

Note: Blank cell indicates the division has no data to report for that energy source. Totals may not add due to independent rounding.

Source: Energy Information Administration, Form EIA-906, "Power Plant Report."

**Table 14. Industrial Biomass Electricity Net Generation by Census Division and Energy Sources, 2005**  
(Thousand Kilowatthours)

Energy Source	Census Division										Total
	New England	Middle Atlantic	East North Central	West North Central	South Atlantic	East South Central	West South Central	Mountain	Pacific Contiguous	Pacific Noncontiguous	
Total	2,157,258	745,510	1,914,858	572,330	9,444,490	5,988,361	5,595,326	554,582	2,217,445	17,805	29,207,967
Agricultural Byproducts/Crops				9,989	156,967	5,344	20,953		17,399	12,932	223,584
Black Liquor	947,511	542,822	873,880	149,751	6,527,657	4,302,943	3,661,308	271,974	621,359		17,899,205
Landfill Gases			102,175		1,783	3,494			5,630		113,082
Municipal Solid Waste					66,898						66,898
Other Biomass Gases			3,382	9,249							12,632
Other Biomass Liquids	582	2,005								4,873	7,460
Other Biomass Solids	9,979		43,975		147,457						201,411
Sludge Waste	37,514	4,023	7,773	6,476	78,145	18,564	5,722		35,479		193,695
Tires	64,597		26,128		99,029	17,262	84,663				291,678
Wood/Wood Waste Liquids		76,579	30,983			398			89,289		197,249
Wood/Wood Waste Solids	1,097,076	120,081	826,563	396,865	2,366,555	1,640,356	1,822,681	282,608	1,448,289		10,001,074

**Note:** Blank cell indicates the division has no data to report for that energy source. Totals may not add due to independent rounding.

**Source:** Energy Information Administration, Form EIA-906, "Power Plant Report."

**Table 15. Renewable Electric Power Sector Net Generation by Energy Source and State, 2004  
(Thousand Kilowatthours)**

State	Geothermal	Hydroelectric Conventional	MSW / Landfill Gas	Other Biomass <sup>a</sup>	Solar	Wind	Wood / Wood Waste	Total
Alabama		10,626,221					177,891	10,804,112
Alaska		1,498,020						1,498,020
Arizona		6,973,147	43,994		4,265			7,021,406
Arkansas		3,643,439		28,712				3,672,151
California	13,105,306	34,140,926	1,661,291	293,895	570,890	4,305,875	2,885,776	56,963,959
Colorado		1,194,665		34,893		220,141	87	1,449,786
Connecticut		462,612	1,344,128	159,451			5,457	1,971,648
Delaware								
District of Columbia								
Florida		265,258	3,034,164	347,474			444,727	4,091,623
Georgia		3,668,499	17,601					3,686,100
Hawaii	213,288	57,268		163,074		7,495		441,125
Idaho		8,461,655					83,908	8,545,563
Illinois		150,268	529,653	256,811		78,073		1,014,805
Indiana		443,721	86,217					529,938
Iowa		945,959	86,318			1,049,952		2,082,229
Kansas		12,547				358,632		371,179
Kentucky		3,780,251	57,029	15,528				3,852,808
Louisiana		1,098,825		73,373				1,172,198
Maine		2,867,071	228,362	80,324			1,464,152	4,639,909
Maryland		2,507,521	644,876					3,152,397
Massachusetts		993,205	1,899,196	1,619			114,336	3,008,356
Michigan		1,509,330	585,046	121,233		1,875	1,105,483	3,322,967
Minnesota		606,649	515,792			812,371	107,849	2,042,661
Mississippi								
Missouri		1,479,914		106,630			192	1,586,736
Montana		8,856,031						8,856,031
Nebraska		913,021	26,739	6		38,431		978,197
Nevada	1,297,504	1,615,123						2,912,627
New Hampshire		1,309,895	218,100				624,441	2,152,436
New Jersey		36,248	1,298,025					1,334,273
New Mexico		138,947				513,465		652,412
New York		23,906,973	1,868,160	74,329		116,450	264,151	26,230,063
North Carolina		4,730,564	107,865	55,944			375,598	5,269,971
North Dakota		1,545,864				214,523		1,760,387
Ohio		729,876	26,368				46,141	802,385
Oklahoma		2,976,676				572,744		3,549,420
Oregon		33,080,819	112,539	15,180		619,012		33,827,550
Pennsylvania		3,155,338	1,790,537	1,377		306,312	202,120	5,455,684
Rhode Island		5,461	101,526					106,987
South Carolina		2,444,837	23,391				215,855	2,684,083
South Dakota		3,597,509				157,678		3,755,187
Tennessee		9,649,206	19,987			3,813		9,673,006
Texas		1,300,609	204,465	72,190		3,137,690		4,714,954
Utah	194,876	449,848	6,982					651,706
Vermont		1,166,269				11,364	387,099	1,564,732
Virginia		1,582,930	731,879	16,290			511,523	2,842,622
Washington		71,500,753	230,610	7,504		736,576	611,706	73,087,149
West Virginia		607,560		14,272		161,191	552	783,575
Wisconsin		1,783,371	382,959	40,786		103,563	98,256	2,408,935
Wyoming		593,147				616,515		1,209,662
Total	14,810,974	265,063,846	17,883,799	1,980,895	575,155	14,143,741	9,727,300	324,185,710

<sup>a</sup> Agriculture byproducts/crops, sludge waste, tires and other biomass solids, liquids and gases.

Note: The electric power sector comprises electricity-only and combined-heat-power (CHP) plants within North American Classification System (NAICS) 22 category whose primary business is to sell electricity, or electricity and heat, to the public. Blank cell indicates the state has no data to report for that energy source. Totals may not equal sum of components due to independent rounding.

Source: Energy Information Administration, Form EIA-906, "Power Plant Report," and Form EIA-920, "Combined Heat and Power Plant Report."

**Table 16. Renewable Commercial and Industrial Sector Net Generation by Energy Source and State, 2004  
(Thousand Kilowatthours)**

State	Hydroelectric Conventional	MSW / Landfill Gas	Other Biomass <sup>a</sup>	Wood / Wood Waste	Total
Alabama		5,109	40,258	3,545,581	3,590,948
Alaska			8,828	387	9,215
Arizona			4		4
Arkansas			4,761	1,725,894	1,730,655
California	3	92,293	318,150	940,970	1,351,416
Colorado					
Connecticut					
Delaware					
District of Columbia					
Florida		5,302	198,059	1,785,019	1,988,380
Georgia	23,897		105,285	3,133,085	3,262,267
Hawaii	36,633	323,903	10,103		370,639
Idaho				489,828	489,828
Illinois	3,261	76,901	11,830		91,992
Indiana		69,173			69,173
Iowa			31,493		31,493
Kansas					
Kentucky			4,847	349,753	354,600
Louisiana			75,031	2,631,087	2,706,118
Maine	563,178	171,774	247,546	1,709,053	2,691,551
Maryland		39,786		172,412	212,198
Massachusetts	5,076		9,385		14,461
Michigan	30,254	274,066	3,098	746,470	1,053,888
Minnesota	131,662	19,600	4,365	480,707	636,334
Mississippi			35,540	1,446,191	1,481,731
Missouri			38,819		38,819
Montana				59,950	59,950
Nebraska			12,773		12,773
Nevada					
New Hampshire	5,861			103,624	109,485
New Jersey	1,255		3,136		4,391
New Mexico					
New York	82,689	239,981		248,350	571,020
North Carolina	704,635		18,495	1,284,707	2,007,837
North Dakota			5,603		5,603
Ohio			3,816	294,744	298,560
Oklahoma				249,348	249,348
Oregon				454,582	454,582
Pennsylvania		207,780	8,745	478,668	695,193
Rhode Island					
South Carolina	2,072	82,853	51,175	1,443,096	1,579,196
South Dakota					
Tennessee	758,906			559,847	1,318,753
Texas		16,097	27,425	906,649	950,171
Utah					
Vermont	20,987			5,615	26,602
Virginia	120	416,473	25,538	1,252,494	1,694,625
Washington	74,947		17,025	782,859	874,831
West Virginia	710,719				710,719
Wisconsin	197,305	27,579	47,681	568,151	840,716
Wyoming					
Total	3,353,460	2,068,670	1,368,814	27,849,121	34,640,065

<sup>a</sup> Agriculture byproducts/crops, sludge waste, tires and other biomass solids, liquids and gases.

Note: Blank cell indicates the state has no data to report for that energy source. Totals may not equal sum of components due to independent rounding.

Source: Energy Information Administration, Form EIA-906, "Power Plant Report," and Form EIA-920, "Combined Heat and Power Plant Report."

**Table 17. Total Renewable Net Generation by Energy Source and State, 2004  
(Thousand Kilowatthours)**

State	Geothermal	Hydroelectric Conventional	MSW / Landfill Gas	Other Biomass <sup>a</sup>	Solar	Wind	Wood / Wood Waste	Total
Alabama		10,626,221	5,109	40,258			3,723,472	14,395,059
Alaska		1,498,020		8,828			387	1,507,236
Arizona		6,973,147	43,994	4	4,265			7,021,410
Arkansas		3,643,439		33,473			1,725,894	5,402,806
California	13,105,306	34,140,929	1,753,584	612,045	570,890	4,305,875	3,826,745	58,315,375
Colorado		1,194,665		34,893		220,141	87	1,449,786
Connecticut		462,612	1,344,128	159,451			5,457	1,971,648
Delaware								
District of Columbia								
Florida		265,258	3,039,467	545,533			2,229,745	6,080,003
Georgia		3,692,396	17,601	105,285			3,133,085	6,948,367
Hawaii	213,288	93,901	323,903	173,177		7,495		811,764
Idaho		8,461,655					573,736	9,035,391
Illinois		153,529	606,554	268,641		78,073		1,106,797
Indiana		443,721	155,391					599,112
Iowa		945,959	86,318	31,493		1,049,952		2,113,721
Kansas		12,547				358,632		371,179
Kentucky		3,780,251	57,029	20,375			349,753	4,207,408
Louisiana		1,098,825		148,404			2,631,087	3,878,316
Maine		3,430,249	400,136	327,870			3,173,205	7,331,461
Maryland		2,507,521	684,662				172,412	3,364,595
Massachusetts		998,281	1,899,196	11,004			114,336	3,022,816
Michigan		1,539,584	859,113	124,331		1,875	1,851,953	4,376,856
Minnesota		738,311	535,392	4,365		812,371	588,556	2,678,995
Mississippi				35,540			1,446,191	1,481,730
Missouri		1,479,914		145,449			192	1,625,555
Montana		8,856,031					59,950	8,915,981
Nebraska		913,021	26,739	12,778		38,431		990,969
Nevada	1,297,504	1,615,123						2,912,628
New Hampshire		1,315,756	218,100				728,066	2,261,922
New Jersey		37,503	1,298,025	3,136				1,338,664
New Mexico		138,947				513,465		652,412
New York		23,989,661	2,108,140	74,329		116,450	512,502	26,801,082
North Carolina		5,435,199	107,865	74,439			1,660,305	7,277,808
North Dakota		1,545,864		5,603		214,523		1,765,990
Ohio		729,876	26,368	3,816			340,885	1,100,945
Oklahoma		2,976,676				572,744	249,348	3,798,768
Oregon		33,080,819	112,539	15,180		619,012	454,582	34,282,132
Pennsylvania		3,155,338	1,998,317	10,122		306,312	680,788	6,150,877
Rhode Island		5,461	101,526					106,987
South Carolina		2,446,909	106,244	51,175			1,658,951	4,263,279
South Dakota		3,597,509				157,678		3,755,187
Tennessee		10,408,112	19,987			3,813	559,847	10,991,759
Texas		1,300,609	220,561	99,614		3,137,690	906,649	5,665,123
Utah	194,876	449,848	6,982					651,706
Vermont		1,187,256				11,364	392,714	1,591,335
Virginia		1,583,050	1,148,352	41,828			1,764,017	4,537,246
Washington		71,575,700	230,610	24,529		736,576	1,394,565	73,961,979
West Virginia		1,318,279		14,272		161,191	552	1,494,294
Wisconsin		1,980,676	410,538	88,467		103,563	666,407	3,249,651
Wyoming		593,147				616,515		1,209,662
Total	14,810,975	268,417,308	19,952,469	3,349,703	575,155	14,143,741	37,576,418	358,825,770

<sup>a</sup> Agriculture byproducts/crops, sludge waste, tires and other biomass solids, liquids and gases.

Note: Blank cell indicates the state has no data to report for that energy source. Totals may not equal sum of components due to independent rounding.

Source: Energy Information Administration, Form EIA-906, "Power Plant Report," and Form EIA-920, " Combined Heat and Power Plant Report."

**Table 18. Renewable Electric Power Sector Net Generation by Energy Source and State, 2005  
(Thousand Kilowatthours)**

State	Geothermal	Hydroelectric Conventional	MSW / Landfill Gas	Other Biomass <sup>a</sup>	Solar	Wind	Wood / Wood Waste	Total
Alabama		10,144,581					202,010	10,346,591
Alaska		1,463,942				589		1,464,531
Arizona		6,410,064	44,690		13,581		12,058	6,480,393
Arkansas		3,082,516		22,770				3,105,286
California	13,022,639	39,626,441	1,624,498	303,503	536,713	4,262,229	2,748,429	62,124,452
Colorado		1,415,296		33,879		776,234	448	2,225,857
Connecticut		478,199	1,311,180	164,437			7,314	1,961,130
Delaware								
District of Columbia								
Florida		266,159	3,013,801	273,987			479,219	4,033,166
Georgia		4,012,283	16,247					4,028,530
Hawaii	221,597	62,321		155,720		6,632		446,270
Idaho		8,542,121					87,703	8,629,824
Illinois		129,037	516,661	65,366		141,146		852,210
Indiana		438,282	20,022					458,304
Iowa		959,526	93,564			1,647,134		2,700,224
Kansas		11,337				425,823		437,160
Kentucky		2,961,193	62,098	16,973				3,040,264
Louisiana		810,948		75,961				886,909
Maine		3,465,890	242,996	103,677			1,875,102	5,687,665
Maryland		1,703,639	669,662					2,373,301
Massachusetts		1,041,455	1,884,193	1,880			120,027	3,047,555
Michigan		1,432,730	610,459	139,257		1,848	1,064,194	3,248,488
Minnesota		645,120	667,343			1,582,477	102,799	2,997,739
Mississippi								
Missouri		1,159,326		66,147				1,225,473
Montana		9,587,349						9,587,349
Nebraska		871,473	24,566	7,449		96,608		1,000,096
Nevada	1,262,707	1,702,380						2,965,087
New Hampshire		1,790,729	214,628				661,530	2,666,887
New Jersey		29,392	1,352,085					1,381,477
New Mexico		164,993		4,644		794,630		964,267
New York		25,719,915	1,959,631	135,832		102,990	286,416	28,204,784
North Carolina		4,656,454	100,088	60,182			388,115	5,204,839
North Dakota		1,341,824				220,345		1,562,169
Ohio		515,744	22,526			13,268	44,273	595,811
Oklahoma		2,630,361				847,773		3,478,134
Oregon		30,948,345	111,170	13,319		734,274	311,132	32,118,240
Pennsylvania		2,232,179	1,847,668	1,672		284,241	199,107	4,564,867
Rhode Island		6,734						6,734
South Carolina		2,935,642	44,159				272,908	3,252,709
South Dakota		3,074,566		21		158,104		3,232,691
Tennessee		8,537,997	27,265			3,339		8,568,601
Texas		1,332,560	192,377	9,045		4,237,209		5,771,191
Utah	184,802	784,463	7,051					976,316
Vermont		1,189,668				11,486	401,638	1,602,792
Virginia		1,471,118	698,454	26,078			540,332	2,735,982
Washington		72,022,983	235,522	5,889		498,470	620,298	73,383,162
West Virginia		891,891		11,468		153,892	460	1,057,711
Wisconsin		1,530,237	310,438	57,928		92,544	142,108	2,133,255
Wyoming		808,375				717,264		1,525,639
Total	14,691,745	267,039,778	17,925,042	1,757,084	550,294	17,810,549	10,567,620	330,342,112

<sup>a</sup> Agriculture byproducts/crops, sludge waste, tires and other biomass solids, liquids and gases.

Note: The electric power sector comprises electricity-only and combined-heat-power (CHP) plants within North American Classification System (NAICS) 22 category whose primary business is to sell electricity, or electricity and heat, to the public. Blank cell indicates the state has no data to report for that energy source. Totals may not equal sum of components due to independent rounding.

Source: Energy Information Administration, Form EIA-906, "Power Plant Report," and Form EIA-920, "Combined Heat and Power Plant Report."

**Table 19. Renewable Commercial and Industrial Sector Net Generation by Energy Source and State, 2005  
(Thousand Kilowatthours)**

State	Hydroelectric Conventional	MSW / Landfill Gas	Other Biomass <sup>a</sup>	Wood / Wood Waste	Total
Alabama		3,494	29,551	3,536,410	3,569,455
Alaska			4,873	381	5,254
Arizona			3,666		3,666
Arkansas			20,215	1,706,996	1,727,211
California	5,425	131,675	369,568	861,668	1,368,336
Colorado					
Connecticut					
Delaware					
District of Columbia					
Florida		1,783	340,090	1,526,718	1,868,591
Georgia	19,770	22,185	91,718	3,148,749	3,282,422
Hawaii	33,867	291,077	12,932		337,876
Idaho				489,337	489,337
Illinois		76,664	22,877		99,541
Indiana		65,236			65,236
Iowa			34,852		34,852
Kansas					
Kentucky			1,222	359,065	360,287
Louisiana			73,917	2,643,987	2,717,904
Maine	625,036	174,510	112,672	1,911,531	2,823,749
Maryland		41,280		195,466	236,746
Massachusetts	495		24,498		24,993
Michigan	28,978	264,015	3,021	737,135	1,033,149
Minnesota	129,609	19,692	6,476	546,617	702,394
Mississippi			10,397	1,519,941	1,530,338
Missouri			12,838		12,838
Montana				65,245	65,245
Nebraska			10,631		10,631
Nevada					
New Hampshire	8,174			124,203	132,377
New Jersey	1,721		2,425		4,146
New Mexico					
New York	62,603	233,572		251,094	547,269
North Carolina	740,048		11,770	1,351,468	2,103,286
North Dakota			9,989		9,989
Ohio			6,217	314,741	320,958
Oklahoma				289,217	289,217
Oregon			14,031	498,174	512,205
Pennsylvania		213,427	4,023	488,389	705,839
Rhode Island					
South Carolina	2,505	77,842	56,022	1,424,557	1,560,926
South Dakota					
Tennessee	771,544			528,281	1,299,825
Texas		14,421	37,569	843,789	895,779
Utah					
Vermont	21,143			8,853	29,996
Virginia	13,235	433,392	20,820	1,259,530	1,726,977
Washington	51,666		21,447	799,096	872,209
West Virginia	555,675				555,675
Wisconsin	209,982	29,381	52,545	682,888	974,796
Wyoming					
Total	3,281,476	2,093,646	1,422,872	28,113,526	34,911,520

<sup>a</sup> Agriculture byproducts/crops, sludge waste, tires and other biomass solids, liquids and gases.

Note: Blank cell indicates the state has no data to report for that energy source. Totals may not equal sum of components due to independent rounding.

Source: Energy Information Administration, Form EIA-906, "Power Plant Report," and Form EIA-920, "Combined Heat and Power Plant Report."

**Table 20. Total Renewable Net Generation by Energy Source and State, 2005**  
(Thousand Kilowatthours)

State	Geothermal	Hydroelectric Conventional	MSW / Landfill Gas	Other Biomass <sup>a</sup>	Solar	Wind	Wood / Wood Waste	Total
Alabama		10,144,581	3,494	29,551			3,738,420	13,916,046
Alaska		1,463,942		4,873		589	381	1,469,785
Arizona		6,410,064	44,690	3,666	13,581		12,058	6,484,059
Arkansas		3,082,516		42,985			1,706,996	4,832,497
California	13,022,639	39,631,866	1,756,173	673,071	536,713	4,262,229	3,610,097	63,492,788
Colorado		1,415,296		33,879		776,234	448	2,225,857
Connecticut		478,199	1,311,180	164,437			7,314	1,961,130
Delaware								
District of Columbia								
Florida		266,159	3,015,584	614,077			2,005,937	5,901,757
Georgia		4,032,053	38,432	91,718			3,148,749	7,310,952
Hawaii	221,597	96,188	291,077	168,652		6,632		784,146
Idaho		8,542,121					577,040	9,119,161
Illinois		129,037	593,325	88,243		141,146		951,751
Indiana		438,282	85,258					523,540
Iowa		959,526	93,564	34,852		1,647,134		2,735,076
Kansas		11,337				425,823		437,160
Kentucky		2,961,193	62,098	18,195			359,065	3,400,551
Louisiana		810,948		149,878			2,643,987	3,604,813
Maine		4,090,926	417,506	216,349			3,786,633	8,511,414
Maryland		1,703,639	710,942				195,466	2,610,047
Massachusetts		1,041,950	1,884,193	26,378			120,027	3,072,548
Michigan		1,461,708	874,474	142,278		1,848	1,801,329	4,281,637
Minnesota		774,729	687,035	6,476		1,582,477	649,416	3,700,133
Mississippi				10,397			1,519,941	1,530,338
Missouri		1,159,326		78,985				1,238,311
Montana		9,587,349					65,245	9,652,594
Nebraska		871,473	24,566	18,080		96,608		1,010,727
Nevada	1,262,707	1,702,380						2,965,087
New Hampshire		1,798,903	214,628				785,733	2,799,264
New Jersey		31,113	1,352,085	2,425				1,385,623
New Mexico		164,993		4,644		794,630		964,267
New York		25,782,518	2,193,203	135,832		102,990	537,510	28,752,053
North Carolina		5,396,502	100,088	71,952			1,739,583	7,308,125
North Dakota		1,341,824		9,989		220,345		1,572,158
Ohio		515,744	22,526	6,217		13,268	359,014	916,769
Oklahoma		2,630,361				847,773	289,217	3,767,351
Oregon		30,948,345	111,170	27,350		734,274	809,306	32,630,445
Pennsylvania		2,232,179	2,061,095	5,695		284,241	687,496	5,270,706
Rhode Island		6,734						6,734
South Carolina		2,938,147	122,001	56,022			1,697,465	4,813,635
South Dakota		3,074,566		21		158,104		3,232,691
Tennessee		9,309,541	27,265			3,339	528,281	9,868,426
Texas		1,332,560	206,798	46,614		4,237,209	843,789	6,666,970
Utah	184,802	784,463	7,051					976,316
Vermont		1,210,811				11,486	410,491	1,632,788
Virginia		1,484,353	1,131,846	46,898			1,799,862	4,462,959
Washington		72,074,649	235,522	27,336		498,470	1,419,394	74,255,371
West Virginia		1,447,566		11,468		153,892	460	1,613,386
Wisconsin		1,740,219	339,819	110,473		92,544	824,996	3,108,051
Wyoming		808,375				717,264		1,525,639
Total	14,691,745	270,321,254	20,018,688	3,179,956	550,294	17,810,549	38,681,146	365,253,632

<sup>a</sup> Agriculture byproducts/crops, sludge waste, tires and other biomass solids, liquids and gases.

Note: Blank cell indicates the state has no data to report for that energy source. Totals may not equal sum of components due to independent rounding.

Source: Energy Information Administration, Form EIA-906, "Power Plant Report," and Form EIA-920, "Combined Heat and Power Plant Report."

**Table 21. Renewable Electric Power Sector Net Summer Capacity by Energy Source and State, 2004 (Megawatts)**

State	Geothermal	Hydroelectric Conventional	MSW / Landfill Gas	Other Biomass <sup>a</sup>	Solar	Wind	Wood / Wood Waste	Total
Alabama		3,280						3,280
Alaska		395				1		396
Arizona		2,710	4		8			2,722
Arkansas		1,388		4				1,392
California	1,956	10,072	242	49	390	2,023	425	15,157
Colorado		643		10		227		880
Connecticut		146	166	26				338
Delaware								
District of Columbia								
Florida		55	438	75			67	635
Georgia		2,004	2					2,007
Hawaii	31	17		46		11		105
Idaho		2,391					12	2,402
Illinois		32	94	45		50		221
Indiana		59	10					69
Iowa		140	6			621		767
Kansas		3				113		116
Kentucky		817	9					826
Louisiana		192		12				204
Maine		622	30				252	903
Maryland		566	118					684
Massachusetts		253	258				26	537
Michigan		241	90			1	158	490
Minnesota		147	136			487	76	847
Mississippi								
Missouri		556						556
Montana		2,627						2,627
Nebraska		266	3	1		13		284
Nevada	142	1,047						1,189
New Hampshire		517	31				91	640
New Jersey		11	181	19				211
New Mexico		82		6		264		352
New York		4,195	267			48	37	4,547
North Carolina		1,792	14				45	1,851
North Dakota		485				64		549
Ohio		122	4			7	7	140
Oklahoma		788				176		964
Oregon		8,330	14	3		223	66	8,636
Pennsylvania		751	310			132	28	1,220
Rhode Island		4	15					19
South Carolina		1,339	3					1,342
South Dakota		1,526				43		1,569
Tennessee		2,429	5			29	7	2,469
Texas		668	40			1,286		1,994
Utah	23	254	1					278
Vermont		299				5	72	376
Virginia		779	93				83	954
Washington		21,066	35	4		243	136	21,485
West Virginia		123				66		189
Wisconsin		438	71	1		36	44	591
Wyoming		303				285		588
Total	2,152	76,970	2,692	303	398	6,456	1,630	90,601

<sup>a</sup> Agriculture byproducts/crops, sludge waste, tires and other biomass solids, liquids and gases.

\* =Less than 500 kilowatts.

Note: The electric power sector comprises electricity-only and combined-heat-power (CHP) plants within North American Classification System (NAICS) 22 category whose primary business is to sell electricity, or electricity and heat, to the public. Blank cell indicates the state has no data to report for that energy source. Totals may not equal sum of components due to independent rounding.

Source: Energy Information Administration, Form EIA-860, "Annual Electric Generator Report."

**Table 22. Renewable Commercial and Industrial Sector Net Summer Capacity by Energy Source and State, 2004 (Megawatts)**

State	Hydroelectric Conventional	MSW / Landfill Gas	Other Biomass <sup>a</sup>	Wood / Wood Waste	Total
Alabama				555	555
Alaska					
Arizona					
Arkansas			2	292	293
California	6	13	44	166	228
Colorado					
Connecticut					
Delaware					
District of Columbia					
Florida			79	278	357
Georgia	7	2	44	457	510
Hawaii	5	60	3		68
Idaho				66	66
Illinois	1	12	3		15
Indiana		9			9
Iowa			3		3
Kansas					
Kentucky				43	43
Louisiana			5	318	322
Maine	100	24		390	514
Maryland		7		2	9
Massachusetts	7		9		16
Michigan	4	67		52	122
Minnesota	29	3		61	92
Mississippi				229	229
Missouri					
Montana				17	17
Nebraska			3		3
Nevada					
New Hampshire				14	14
New Jersey			1		1
New Mexico					
New York	15	33			48
North Carolina	160			211	371
North Dakota			10		10
Ohio				47	47
Oklahoma		16		63	78
Oregon				119	119
Pennsylvania		28		80	108
Rhode Island					
South Carolina	1	10		220	231
South Dakota					
Tennessee	179			100	279
Texas			8	100	107
Utah					
Vermont	5			4	8
Virginia	4	76		324	403
Washington	4			190	194
West Virginia	101				101
Wisconsin	43	4	7	154	208
Wyoming					
Total	670	363	218	4,551	5,801

<sup>a</sup> Agriculture byproducts/crops, sludge waste, tires and other biomass solids, liquids and gases.

Note: Blank cell indicates the state has no data to report for that energy source. Totals may not equal sum of components due to independent rounding.

Source: Energy Information Administration, Form EIA-860, "Annual Electric Generator Report."

**Table 23. Total Renewable Net Summer Capacity by Energy Source and State, 2004 (Megawatts)**

State	Geothermal	Hydroelectric Conventional	MSW / Landfill Gas	Other Biomass <sup>a</sup>	Solar	Wind	Wood / Wood Waste	Total
Alabama		3,280					555	3,835
Alaska		395				1		396
Arizona		2,710	4		8			2,722
Arkansas		1,388		6			292	1,686
California	1,956	10,078	255	93	390	2,023	591	15,386
Colorado		643		10		227		880
Connecticut		146	166	26				338
Delaware								
District of Columbia								
Florida		55	438	154			345	992
Georgia		2,012	5	44			457	2,517
Hawaii	31	22	60	49		11		173
Idaho		2,391					77	2,468
Illinois		33	106	48		50		237
Indiana		59	19					78
Iowa		140	6	3		621		771
Kansas		3				113		116
Kentucky		817	9				43	869
Louisiana		192		17			318	527
Maine		722	53				642	1,418
Maryland		566	125				2	693
Massachusetts		260	258	9			26	553
Michigan		245	157			1	210	612
Minnesota		176	139			487	137	939
Mississippi							229	229
Missouri		556						556
Montana		2,627					17	2,645
Nebraska		266	3	4		13		287
Nevada	142	1,047						1,189
New Hampshire		518	31				104	654
New Jersey		12	181	20				212
New Mexico		82		6		264		352
New York		4,210	301			48	37	4,596
North Carolina		1,951	14				256	2,222
North Dakota		485		10		64		559
Ohio		122	4			7	54	186
Oklahoma		788	16			176	63	1,043
Oregon		8,330	14	3		223	186	8,756
Pennsylvania		751	338			132	108	1,329
Rhode Island		4	15					19
South Carolina		1,340	13				220	1,573
South Dakota		1,526				43		1,569
Tennessee		2,608	5			29	107	2,748
Texas		668	40	8		1,286	100	2,101
Utah	23	254	1					278
Vermont		304				5	76	385
Virginia		782	168				407	1,358
Washington		21,070	35	4		243	326	21,678
West Virginia		224				66		290
Wisconsin		482	75	8		36	198	799
Wyoming		303				285		588
Total	2,152	77,641	3,055	520	398	6,456	6,182	96,403

<sup>a</sup> Agriculture byproducts/crops, sludge waste, tires and other biomass solids, liquids and gases.

\* =Less than 500 kilowatts.

Note: Blank cell indicates the state has no data to report for that energy source. Totals may not equal sum of components due to independent rounding.

Source: Energy Information Administration, Form EIA-860, "Annual Electric Generator Report."

**Table 24. Renewable Electric Power Sector Net Capacity by Energy Source and State, 2005 (Megawatts)**

State	Geothermal	Hydroelectric Conventional	MSW / Landfill Gas	Other Biomass <sup>a</sup>	Solar	Wind	Wood / Wood Waste	Total
Alabama		3,240						3,240
Alaska		397				10		406
Arizona		2,720	4		9		3	2,736
Arkansas		1,388		4				1,392
California	2,046	10,082	245	49	402	2,052	429	15,306
Colorado		652		10		228		889
Connecticut		146	166	26				339
Delaware								
District of Columbia								
Florida		55	442	75			67	639
Georgia		2,007	2					2,010
Hawaii	31	18		46		11		107
Idaho		2,390				11	12	2,412
Illinois		32	88	45		105		270
Indiana		60	10					69
Iowa		131	6			820		958
Kansas		3				263		266
Kentucky		817	10					827
Louisiana		192		12				204
Maine		620	30	35			217	901
Maryland		566	118					684
Massachusetts		253	261				26	540
Michigan		249	90			1	158	498
Minnesota		147	133			687	76	1,043
Mississippi								
Missouri		552						552
Montana		2,619				135		2,754
Nebraska		269	3	1		73		346
Nevada	185	1,047						1,233
New Hampshire		507	31				91	629
New Jersey		3	181	19				203
New Mexico		82		6		404		492
New York		4,192	270			185	37	4,683
North Carolina		1,785	14				79	1,879
North Dakota		432				96		528
Ohio		101	4			7	7	119
Oklahoma		800				474		1,274
Oregon		8,336	14	3		298	56	8,708
Pennsylvania		748	310			223	28	1,309
Rhode Island		4	24					28
South Carolina		1,347	9					1,356
South Dakota		1,500				43		1,543
Tennessee		2,415	5	2		29	12	2,463
Texas		673	41			1,755		2,469
Utah	23	255	1					279
Vermont		304				5	72	381
Virginia		669	93				83	844
Washington		21,138	35	4		393	136	21,707
West Virginia		163				66		229
Wisconsin		444	46	1		45	73	610
Wyoming		303				287		590
Total	2,285	76,852	2,685	339	411	8,706	1,662	92,941

<sup>a</sup> Agriculture byproducts/crops, sludge waste, tires and other biomass solids, liquids and gases.

**Note:** The electric power sector comprises electricity-only and combined-heat-power (CHP) plants within North American Classification System (NAICS) 22 category whose primary business is to sell electricity, or electricity and heat, to the public. Blank cell indicates the state has no data to report for that energy source. Totals may not equal sum of components due to independent rounding.

**Source:** Energy Information Administration, Form EIA-860, "Annual Electric Generator Report."

**Table 25. Renewable Commercial and Industrial Sector Net Summer Capacity by Energy Source and State, 2005 (Megawatts)**

State	Hydroelectric Conventional	MSW / Landfill Gas	Other Biomass <sup>a</sup>	Wood / Wood Waste	Total
Alabama				553	553
Alaska					
Arizona					
Arkansas			2	292	293
California	6	13	96	147	262
Colorado					
Connecticut					
Delaware					
District of Columbia					
Florida			70	276	346
Georgia	7	2	44	450	504
Hawaii	5	60	3		68
Idaho				66	66
Illinois	1	12	3		15
Indiana		9			9
Iowa			3		3
Kansas					
Kentucky				43	43
Louisiana			3	318	321
Maine	100	24		388	512
Maryland		7		2	9
Massachusetts	7		9		16
Michigan	4	67		52	122
Minnesota	29	4		60	93
Mississippi				229	229
Missouri					
Montana				17	17
Nebraska			3		3
Nevada					
New Hampshire				14	14
New Jersey			1		1
New Mexico					
New York	15	33			48
North Carolina	160			211	371
North Dakota			10		10
Ohio				17	17
Oklahoma		16		63	78
Oregon				136	136
Pennsylvania		34		80	114
Rhode Island					
South Carolina	1	10		217	228
South Dakota					
Tennessee	193			100	293
Texas			16	130	145
Utah					
Vermont	5			4	8
Virginia	4	76		326	405
Washington	8			192	200
West Virginia	101				101
Wisconsin	43	4		148	195
Wyoming					
Total	688	369	261	4,532	5,850

<sup>a</sup> Agriculture byproducts/crops, sludge waste, tires and other biomass solids, liquids and gases.

Note: Blank cell indicates the state has no data to report for that energy source. Totals may not equal sum of components due to independent rounding.

Source: Energy Information Administration, Form EIA-860, "Annual Electric Generator Report."

**Table 26. Total Renewable Net Summer Capacity by Energy Source and State, 2005 (Megawatts)**

State	Geothermal	Hydroelectric Conventional	MSW / Landfill Gas	Other Biomass <sup>a</sup>	Solar	Wind	Wood / Wood Waste	Total
Alabama		3,240					553	3,793
Alaska		397				10		406
Arizona		2,720	4		9		3	2,736
Arkansas		1,388		6			292	1,686
California	2,046	10,088	258	145	402	2,052	577	15,567
Colorado		652		10		228		889
Connecticut		146	166	26				339
Delaware								
District of Columbia								
Florida		55	442	145			343	985
Georgia		2,014	5	44			450	2,513
Hawaii	31	24	60	49		11		175
Idaho		2,390				11	78	2,478
Illinois		33	100	48		105		285
Indiana		60	19					78
Iowa		131	6	3		820		961
Kansas		3				263		266
Kentucky		817	10				43	870
Louisiana		192		15			318	525
Maine		720	53	35			605	1,413
Maryland		566	125				2	693
Massachusetts		260	261	9			26	556
Michigan		253	157			1	210	620
Minnesota		176	137			687	136	1,136
Mississippi							229	229
Missouri		552						552
Montana		2,619				135	17	2,772
Nebraska		269	3	4		73		349
Nevada	185	1,047						1,233
New Hampshire		507	31				104	643
New Jersey		3	181	20				204
New Mexico		82		6		404		492
New York		4,207	303			185	37	4,732
North Carolina		1,945	14				291	2,250
North Dakota		432		10		96		537
Ohio		101	4			7	24	135
Oklahoma		800	16			474	63	1,353
Oregon		8,336	14	3		298	193	8,844
Pennsylvania		748	344			223	108	1,423
Rhode Island		4	24					28
South Carolina		1,348	19				217	1,583
South Dakota		1,500				43		1,543
Tennessee		2,608	5	2		29	113	2,756
Texas		673	41	16		1,755	130	2,614
Utah	23	255	1					279
Vermont		309				5	76	389
Virginia		672	168				409	1,249
Washington		21,146	35	4		393	328	21,907
West Virginia		264				66		330
Wisconsin		487	50	1		45	221	805
Wyoming		303				287		590
Total	2,285	77,541	3,055	600	411	8,706	6,193	98,791

<sup>a</sup> Agriculture byproducts/crops, sludge waste, tires and other biomass solids, liquids and gases.

Note: Blank cell indicates the state has no data to report for that energy source. Totals may not equal sum of components due to independent rounding.

Source: Energy Information Administration, Form EIA-860, "Annual Electric Generator Report."

**Table 27. Renewable Market Share of Net Generation by State, 2004 and 2005  
(Thousand Kilowatthours)**

State	2004			2005		
	Total State Generation	Percent Renewable	Percent NonHydro Renewable	Total State Generation	Percent Renewable	Percent NonHydro Renewable
Alabama	137,354,771	10.5	2.7	137,948,581	10.1	2.7
Alaska	6,526,717	23.1	0.1	6,576,659	22.3	0.1
Arizona	104,564,143	6.7	0.0	101,478,654	6.4	0.1
Arkansas	51,927,632	10.4	3.4	47,794,509	10.1	3.7
California	194,780,355	29.9	12.4	200,292,818	31.7	11.9
Colorado	47,869,492	3.0	0.5	49,616,694	4.5	1.6
Connecticut	32,633,408	6.0	4.6	33,549,747	5.8	4.4
Delaware	7,855,553	-	-	8,136,568	-	-
District of Columbia	36,487	-	-	226,042	-	-
Florida	218,117,928	2.8	2.7	220,256,412	2.7	2.6
Georgia	126,812,715	5.5	2.6	136,667,892	5.3	2.4
Hawaii	11,410,403	7.1	6.3	11,522,805	6.8	6.0
Idaho	10,863,039	83.2	5.3	10,824,984	84.2	5.3
Illinois	191,957,778	0.6	0.5	194,120,146	0.5	0.4
Indiana	127,770,396	0.5	0.1	130,371,573	0.4	0.1
Iowa	43,248,189	4.9	2.7	44,156,160	6.2	4.0
Kansas	46,782,659	0.8	0.8	45,862,696	1.0	0.9
Kentucky	94,529,947	4.5	0.5	97,822,419	3.5	0.4
Louisiana	98,172,309	4.0	2.8	92,616,878	3.9	3.0
Maine	19,098,885	38.4	20.4	18,843,978	45.2	23.5
Maryland	52,052,770	6.5	1.6	52,661,600	5.0	1.7
Massachusetts	47,500,483	6.4	4.3	47,515,443	6.5	4.3
Michigan	118,487,269	3.7	2.4	121,619,771	3.5	2.3
Minnesota	52,364,127	5.1	3.7	53,018,995	7.0	5.5
Mississippi	43,662,613	3.4	3.4	45,067,453	3.4	3.4
Missouri	87,632,910	1.9	0.2	90,828,230	1.4	0.1
Montana	26,788,768	33.3	0.2	27,938,778	34.5	0.2
Nebraska	32,008,709	3.1	0.2	31,464,734	3.2	0.4
Nevada	37,667,435	7.7	3.4	40,213,752	7.4	3.1
New Hampshire	23,875,787	9.5	4.0	24,470,013	11.4	4.1
New Jersey	55,882,342	2.4	2.3	60,549,583	2.3	2.2
New Mexico	32,940,361	2.0	1.6	35,135,642	2.7	2.3
New York	137,964,794	19.4	2.0	146,887,419	19.6	2.0
North Carolina	126,329,957	5.8	1.5	129,748,578	5.6	1.5
North Dakota	29,936,106	5.9	0.7	31,932,615	4.9	0.7
Ohio	148,345,905	0.7	0.3	156,976,323	0.6	0.3
Oklahoma	60,729,560	6.3	1.4	68,607,827	5.5	1.7
Oregon	51,381,278	66.7	2.3	49,325,003	66.2	3.4
Pennsylvania	214,658,501	2.9	1.4	218,091,125	2.4	1.4
Rhode Island	4,939,420	2.2	2.1	6,053,294	0.1	0.0
South Carolina	97,939,929	4.4	1.9	102,514,665	4.7	1.8
South Dakota	7,510,214	50.0	2.1	6,520,769	49.6	2.4
Tennessee	97,594,542	11.3	0.6	97,117,165	10.2	0.6
Texas	390,299,132	1.5	1.1	396,668,722	1.7	1.3
Utah	38,211,977	1.7	0.5	38,165,131	2.6	0.5
Vermont	5,470,379	29.1	7.4	5,716,755	28.6	7.4
Virginia	78,900,040	5.8	3.7	78,943,045	5.7	3.8
Washington	102,165,052	72.4	2.3	101,965,850	72.8	2.1
West Virginia	89,749,562	1.7	0.2	93,626,285	1.7	0.2
Wisconsin	60,444,933	5.4	2.1	61,824,664	5.0	2.2
Wyoming	44,807,604	2.7	1.4	45,567,307	3.3	1.6
Total	3,970,555,263	9.0	2.3	4,055,422,750	9.0	2.3

\* = Less than .05 percent.

- = Not applicable.

Note: Totals may not equal sum of components due to independent rounding.

Source: Energy Information Administration, Form EIA-906, "Power Plant Report," and Form EIA-920, "Combined Heat and Power Plant Report."

**Table 28. Renewable Portfolio Standards and State Mandates by State, 2007**

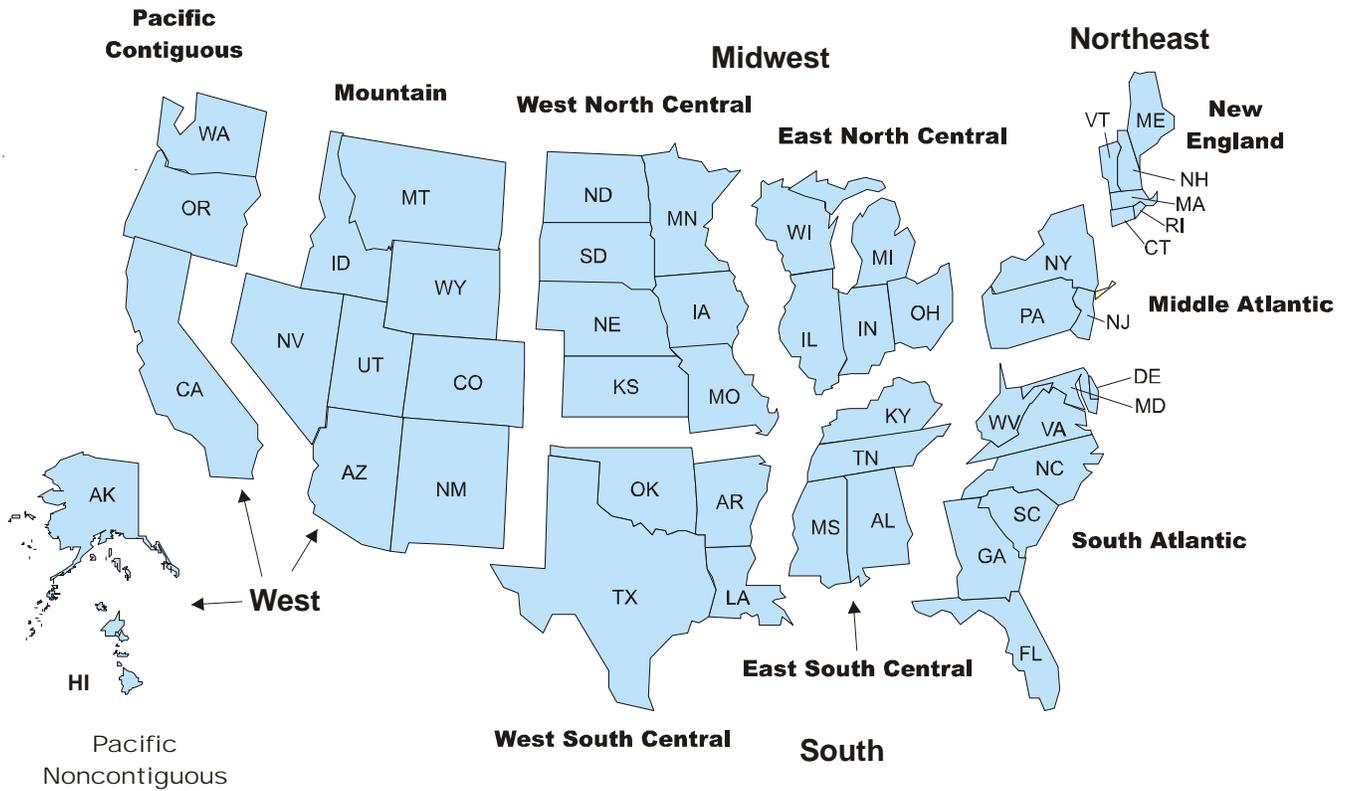
	RPS or Mandate
Alabama	
Alaska	
Arizona	X
Arkansas	
California	X
Colorado	X
Connecticut	X
Delaware	X
District of Columbia	X
Florida <sup>a</sup>	X
Georgia	
Hawaii	X
Idaho	
Illinois	X
Indiana	
Iowa	X
Kansas	
Kentucky	
Louisiana	
Maine	X
Maryland	X
Massachusetts	X
Michigan	
Minnesota	X
Mississippi	
Missouri	
Montana	X
Nebraska	
Nevada	X
New Hampshire	
New Jersey	X
New Mexico	X
New York	X
North Carolina	
North Dakota	
Ohio	
Oklahoma	
Oregon	
Pennsylvania	X
Rhode Island	X
South Carolina	
South Dakota	
Tennessee	
Texas	X
Utah	
Vermont	X
Virginia	
Washington	X
West Virginia	
Wisconsin	X
Wyoming	

<sup>a</sup> In Florida the RPS is not statewide.

**Note:** In a few states, such as Hawaii, Illinois, and Vermont the renewable portfolio standard (RPS) is voluntary. Blank cell indicates there is no RPS or state mandate for that state.

**Source:** North Carolina Solar Center, Database of State Incentives for Renewable Energy (DSIRE) website: <http://www.dsireusa.org> (February 6, 2007)

**Figure E1. U.S. Census Regions and Divisions**



Source: Energy Information Administration, Office of Coal, Nuclear, Electric and Alternate Fuels.